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Human dimensions of migratory game-bird hunting in Canada

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Preface

The thoughts and findings that follow may be viewed as an expression of CWS's increasing interest in the socio-cultural underpinnings of conservation. They represent a timely contribution to important discussions within CWS leading to future roles and responsibilities.

The study sheds light on the potential contributions of a sociological perspective and of social research in wildlife conservation. It assumes that human populations are a dynamic part of wildlife management and exemplifies how the study of human beings and their interactions with wildlife are relevant to wildlife managers and can be integrated in policy and program decisions. The findings suggest that hunter-related policies and programs in the future may be increasingly affected by additional factors which will complement the traditional management concerns with wildlife populations and bag limits.

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Director
Migratory Birds Branch

Abstract

Wildlife management is concerned with wildlife populations, habitat and human populations. Knowledge of the needs of wildlife, habitat and people are of equal importance in achieving management goals and maximizing the benefits provided by wildlife species. In this report, data from a social survey of Canadian migratory game-bird hunters provide information on a wide range of socio-economic variables. Hunting emerges as a complex activity, and the needs of hunters are seen to stem from many elements of the sport. Although the probability of harvesting birds is central to the activity, it is not the only need hunters have. Social, physical and psychological benefits accrue to game-bird hunters when a variety of needs are met, needs that may range from uncrowded hunting sites to the opportunity to hunt with close friends. Information on the human dimensions of hunting may assist managers in planning, evaluating and maintaining wildlife policies and programs.

Introduction

Acknowledgements

Special thanks are due to the following persons for their suggestions and encouraging reviews of an earlier draft: H. Boyd (CWS), T. Brown (Cornell University), J. Cinq-Mars (CWS), J.L. Ducharme (Ministère du Loisir, de la Chasse et de la Pêche), P. Eagles (University of Waterloo), A. Goodman (CWS), J. Hendee (USDA Forest Service), J. Inder (CWS), E. Langeneau (Michigan State Department of Natural Resources), T. Lash (CWS), P. Loshak (CWS), G.E.J. Smith (CWS), Jim Marshall (Environment Canada).

The purpose of this report is to present information on Canadian migratory game-bird hunters, and to illustrate how knowledge of human-related wildlife issues can be used alongside biological data to manage game birds in a comprehensive manner.

There are approximately half a million hunters of migratory game birds in Canada. This group represents the most visible users of Canada's waterfowl resource, although they are by no means the only ones who appreciate the well-being of this resource. To date, there has been little systematic study of migratory game-bird hunters as members of society who benefit from careful wildlife management and who are, moreover, an integral part of management.

The report falls into three distinct parts. Section 1 defines wildlife management and discusses the importance of including research on human dimensions in management strategies. Sections 2–7 present the results of a survey of Canadian migratory game-bird hunters, and contain information on several "human" issues that are pertinent to wildlife management. This part includes issues that relate to activity and success, hunting sites, economic expenditures, recruitment, hunter commitment, and sources of satisfaction and dissatisfaction. We have emphasized national rather than regional characteristics in Sections 2–7, although regional differences that suggest particular problems or trends have been highlighted. Section 8 discusses the conclusions and impressions we have gained in doing this research, and discusses the potential applications of data relating to human dimensions in wildlife management.

Section 1:

Human dimensions in wildlife management

In North America, as in other areas of the earth, the demands placed on the natural world by human populations have necessitated the control of man's use of wildlife and its habitat. Hence, the keystone of modern wildlife management is the ability to regulate man's impact on wildlife species and, when possible, to manipulate habitat so that wildlife can meet the demands placed on it by man. The concept of stewardship is also important to wildlife management in that managers are effectively given a mandate by society both to protect animal populations and to ensure their present and future use or enjoyment by human beings. In this section, we present a definition of wildlife management that attempts to incorporate the notion of stewardship. A brief review of wildlife-related policies of the Canadian government illustrates the importance of including information on human needs and motivations as they pertain to wildlife in general, and migratory game birds in particular. Finally, an illustration is provided of how the use of human studies can assist managers in fulfilling their mandate.

1. A definition of wildlife management

In the role of steward, the manager of wildlife walks a fine line; movement to one side causes him to focus on the needs of wildlife at the expense of human needs, and movement to the other side causes him to dwell on the needs and wishes of man, at the expense of wildlife. The manager must therefore define his task clearly, and seek to maintain a balance. Of equal importance is the definition assigned to the term 'wildlife management'; this must also be balanced. We define wildlife management in the following manner (adapted from Giles 1971:1):

> . . . Wildlife management is the science and art of studying and influencing the nature and interaction of habitats, wildlife populations, and human populations in order to achieve specific goals or benefits by means of the wildlife resource.

According to this definition, wildlife management must encompass all of the elements that influence wildlife, not the least of which is mankind. Figure 1 illustrates the pivotal role of wildlife managers in influencing the interactions among the three poles of the complex. The figure suggests that approximately one third of the management issues are human-related. In practice, however, managers usually acknowledge that 'people problems' normally account for considerably more than one third of the wildlife management effort. The optimum relationship among habitat, wildlife, and the public is symbiotic. Hence knowledge of the needs of habitat, wildlife, and people is of equal importance in achieving management goals and maximizing the tangible and intangible benefits provided by wildlife species.

This definition of wildlife management is consistent with the mandate of Environment Canada and its directorate, the Canadian Wildlife Service (CWS), which is to:

> foster harmony between society and the environment for the benefit of present and future generations of Canadians (Environment Canada 1981:4).

To achieve this, four principal objectives are pursued:

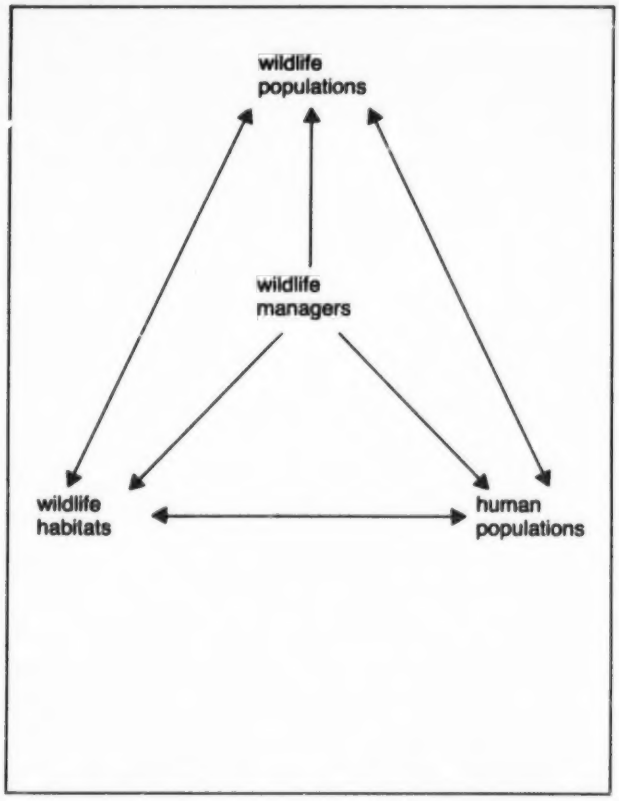
1. To conserve and enhance Canada's renewable resources for sustained economic and social benefit;
2. To protect the environment from the adverse impact of human activities;
3. To facilitate the adaptation of human activities to the environment;
4. To safeguard, and foster public understanding and enjoyment of, Canada's natural and historic heritage.

Obtaining information that can be used to identify economic or social benefits, or problems associated with these benefits, is clearly an important part of wildlife management. Hence our definition of wildlife management states the need to include a "human" element in management practices. This need has been recognized in wildlife policy statements in Canada.

2. Statements of wildlife policy in Canada

The concern to manage Canadian wildlife according to the needs of both wildlife and people has long been an implicit part of wildlife policy in Canada. The Migratory Bird Treaty of 1916 between Canada and the US was the first major expression of policy in both countries. It defined a number of bird species as migratory, established where and when some of them could be hunted, and called for the implementation of several other conservation measures. The significance of this treaty, as stated in its preamble, is that it is the product of public concern about the "danger" of exterminating a natural resource deemed to be of "great value" to North Americans. A second major development in wildlife policy occurred in 1966, when Canada's National Wildlife Policy and Programme (CNWPP) was tabled in the House of Commons and supported unanimously by all parties. The introduction to CNWPP stated that too little was being done to ensure the future well-being of wildlife in Canada, and suggested that wildlife had a substantial and beneficial impact on Canadian society in terms of contributions to the national economy, outdoor recreation, aesthetic

Figure 1
The focus of wildlife management



values, travel, and tourism. It also suggested that the consumptive[1] and non-consumptive demand for wildlife would probably increase with population growth and a rising standard of living. The CNWPP proposed numerous wildlife policy guidelines, several of which addressed human-related management issues, as an important part of overall wildlife management.

These guidelines were eventually adopted and expanded in waterfowl policy statements of CWS over the last decade and a half (Tener and Loughrey 1970, Loughrey 1975, Environment Canada 1980). Before 1970, the primary objectives of the migratory bird management program of CWS had been (Cooch 1969:40):

1. To maintain a total population of waterfowl at levels not less than those that existed during the period 1956–62;
2. To manage migratory waterfowl for the benefit and enjoyment of people — meeting recreational, aesthetic, and scientific needs for this resource as equitably as location of habitat and requirements for preservation of this resource permit.

Until the 1970s, migratory bird management had focused mainly on the first objective (Cooch 1969). Managing waterfowl to meet the second objective was not emphasized until the 1970s, when CWS began to recognize its need for data on human-related issues. This was sometimes expressed indirectly through broad policy objectives similar to the following (Loughrey 1975:26):

1. To assess the social and economic value of migratory birds;
2. To encourage and to provide for the non-consumptive recreational use of all species of migratory birds;
3. To ensure production of migratory game birds to provide optimum consumptive recreational use.

At other times, this need was expressed more explicitly: in their comprehensive review of CWS sub-activities, Boyd *et al.* (1970) remarked that wildlife managers sometimes made the assumption that they know what is good or best for people. They suggested that this approach was "obsolete", and emphasized the need to improve research on human needs and motivations (Boyd *et al.* 1970:3). Subsequently, CWS identified the need for information in four areas: 1) the current and potential economic benefits to be derived from migratory bird species in various geographic areas; 2) forecasting and monitoring of trends in the value of migratory birds; 3) estimation of the satisfaction derived from hunting migratory game birds in various geographic areas; and 4) determining the social characteristics of migratory game-bird hunters (Boyd and Loughrey 1971, Loughrey 1975).

Recently, the 1981 Waterfowl Management Plan for Canada stated that Canadian waterfowl management programs are guided by both human demand and ecological principles; the attempt to incorporate human needs into policy objectives is emerging as an integral part of Canadian wildlife management.

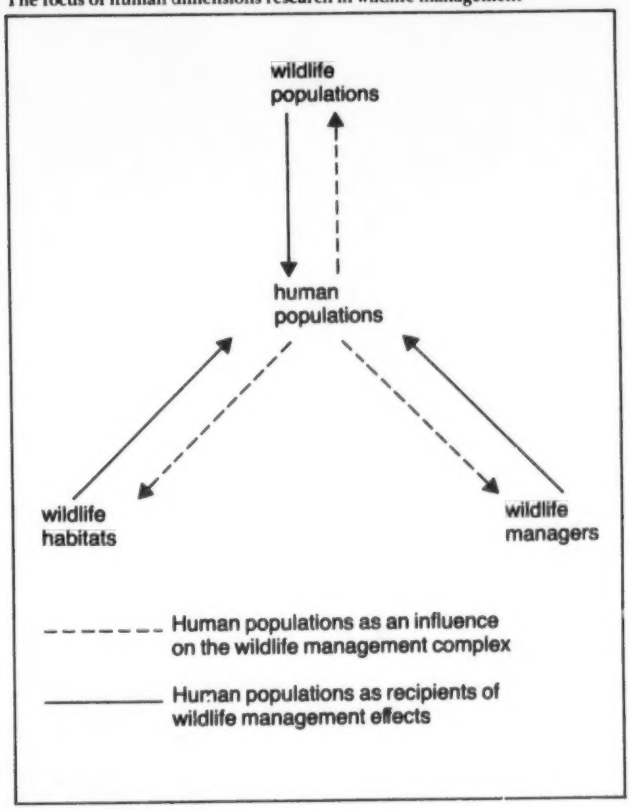
3. Human studies and migratory game-bird management

Wildlife management depends on the interaction among wildlife, habitat, managers, and human populations. Although it is possible to concentrate research on any one of these factors, studies involving the human element are our primary focus here. Emphasis will be on the interaction between human populations and other factors of the management complex, and on the behaviour, benefits, or problems such interactions create. The relationships between human populations and the other three factors affecting wildlife management are shown in Figure 2.

Human studies examine the nature and behaviour of human populations as they influence and are influenced by wildlife, habitat, and managers. These interactions consist of activities such as bird-watching, hunting, camping, and even agriculture and industry. They also include the thoughts or attitudes people have about certain wildlife species or even about wildlife managers and the regulations they place on the use of wildlife. The human populations factor in the management complex is of course composed of many different subsets or publics, each with its own values, attitudes, preferences, and behaviour towards wildlife populations and their management. Human studies can help managers make decisions by providing data on human–wildlife interactions. By monitoring these data over time, changes in human–wildlife interactions can be acknowledged, especially as they become the source of either benefits or problems. Integrating this type of analysis into management strategies presents a challenge: this issue is addressed in the conclusion. It will become apparent throughout this study that migratory game-bird hunting can be described using a range of human-related variables. This type of information may be used as a corollary to data such as the number of birds harvested in a given year, or the number of recreational days provided by migratory game-bird hunting: although hunting days and harvest data are commonly used as indicators of

[1] The term *consumptive* refers to the activity of harvesting wildlife. This usually means hunting wildlife, although it may also include collecting wildlife specimens and trapping. *Non-consumptive* refers to activities that do not involve harvesting wildlife, such as observing, feeding, photographing, or studying wildlife.

Figure 2
The focus of human dimensions research in wildlife management


wildlife populations
human populations
wildlife habitats
wildlife managers
Human populations as an influence on the wildlife management complex
Human populations as recipients of wildlife management effects

hunter activity and benefits, they do not illustrate what occurs during a recreation day, nor do they identify actual sources of benefits or problems. Human studies complement such data by providing a more detailed examination of migratory game-bird hunters and hunting in Canada.

4. Study methods

The data used in this survey were obtained from a national sample of 1 969 migratory game-bird hunters who were selected systematically from the Permit Files for 1974 and 1975. The object of this survey was to gather information on attitudinal, behavioural, and economic dimensions of migratory game-bird hunting in order to gain a better understanding of hunters and of the benefits and problems associated with their sport. For optimal representation, the sample was stratified by country of residence, previous hunting experience, and zone of permit purchase. Prince Edward Island and Saskatchewan were excluded from the sample to reduce the response burden on permit buyers there who were heavily canvassed in recent years. G.E.J. Smith of the CWS Biometrics Division designed the sample, which is summarized in Appendix 1. Sample sizes among provinces varied between 220 and 327 respondents. Because of the stratified design, the responses to the questionnaires were weighted to make them representative of the 1975 permit universe. The weighting factors were adapted from a procedure derived by Smith (1975) and are a function of number of permits sold, number of questionnaires returned, province and zone of permit sale, previous permit purchase, hunting experience, and country of residence.

The mail questionnaire was designed as a bilingual booklet in accordance with principles outlined by Filion (1978). Most questions could be answered using simple check marks. The 64-question schedule was divided into five parts. Parts 1 and 2 asked about game-bird hunting behaviour, including hunting activity and expenditures in 1975; Part 3 dealt with the enjoyment, satisfactions, and problems experienced by migratory game-bird hunters; Part 4 asked about outdoor recreation activities other than bird hunting; and Part 5 dealt with demographic and socio-economic characteristics. The actual questionnaire is shown in Appendix 2.

The questionnaire was mailed between 1 February and 31 March 1976, with three follow-up mailings to non-respondents. This yielded a final response rate of 91.9%. Completed questionnaires were edited and coded manually. The data were subsequently keypunched, machine edited, and transferred to magnetic tape for analysis. The data were analysed, using version 7 of the Statistical Package for the Social Sciences (Nie *et al.* 1975). Tables were constructed to provide profiles for the five administrative regions of CWS and for Canada as a whole. Where appropriate, we give statistical test results to indicate if any differences among regions are significant.

Hunter activity and harvest

Data on the numbers of birds bagged and recreation days have traditionally been used as indicators of the benefits provided by hunter–wildlife interaction. Although the data do not provide a complete understanding of these benefits, they nevertheless provide a good starting point for an analysis of migratory game-bird hunters. The extent of hunters' activity and their harvest of birds are of importance both in assessing the impact of hunting on bird populations and in understanding the demands of hunters. This section presents data on the nature of hunter activity and harvests and the reasons why hunters might be inactive.

1. The nature of hunter activity and harvests

Table 1 summarizes the recreational activity and harvests derived from migratory game-bird hunting in 1975–76. Over 80% of the individuals surveyed bought migratory game-bird hunting permits in 1975–76. In other words, 20% of the sample had not purchased a hunting permit that season. Of those who bought permits, 71.8% actually hunted during the 1975 season. British Columbia had the lowest number of permit buyers in 1975–76 (73.5%) and the fewest active hunters (52.4%).

Migratory game-bird hunters spent an average of 13.1 days in 1975–76 hunting migratory game birds, and did most of their hunting on weekends. Quebec had 20% more weekend hunters than the national average. The tendency for some regions to have more weekend hunters may produce crowding problems in hunting areas. If, as in the case of Quebec, 86% of the hunter population are active on only two days of the week, an excessive burden may be placed on available hunting sites.

Eighty percent of migratory game-bird hunters who were active in 1975–76 were successful in harvesting waterfowl (ducks and geese), making an average harvest of 15.5 birds per successful hunter. Hunters in the Atlantic region had a significantly smaller mean waterfowl harvest (9.3 birds) — at least four birds less than any other region, and 6.2 less than the national average. Western hunters displayed characteristics that were markedly different from those in the three eastern regions: they had the lowest average number of days in the field, the highest number of successful hunters, and the highest mean waterfowl harvests.

The types of migratory game-birds that hunters pursue can be an important element in determining levels of activity and success. Hunting species that are common and abundant can greatly increase the likelihood of success, and perhaps encourages some hunters to be more active. Table 2 shows the species group most preferred by (or readily available to) hunters in Canada. For all of Canada, and in each region, ducks were the most sought after species (80.6%). Geese were second in popularity across Canada, with the exception of the Atlantic region, where other migratory game-birds, such as coot, snipe, and woodcock ranked second. Geese were most intensively hunted by prairie hunters (26.4%). No hunters in British Columbia reported pursuing migratory game birds other than waterfowl. Hunters in Quebec pursued other migratory game-birds or geese almost equally.

Table 1
Recreational activity and harvests from migratory game-bird (MGB) hunting in 1975–76, by region

Recreational activity and harvests	Respondents, by region					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Bought 1975 MGB hunting permit* (n = 1557)	81.6%	81.2%	87.1%	80.7%	73.5%	82.6%
Permittees hunting in 1975* (n = 1541)	70.7%	67.3%	75.5%	75.6%	52.4%	71.8%
Mean MGB hunting days per hunters† (n = 1028)	14.0	13.4	14.3	11.8	11.6	13.1
Hunting mostly on weekends* (n = 1073)	60.8%	86.6%	67.6%	58.4%	63.0%	66.4%
Hunters successful in 1975* (n = 1095)	70.0%	80.2%	76.0%	89.0%	86.5%	80.3%
Mean waterfowl harvest per successful hunter† (n = 854)	9.3	14.7	13.6	19.0	18.4	15.5

*Overall chi-square test for differences among regions significant at $P < 0.01$.
†One-way ANOVA for differences among regions significant at $P < 0.01$.

Some evidence of the satisfaction hunters felt with their hunting experience in 1975 can be seen in their attitudes toward their total harvests (Table 3). Less than a quarter of those surveyed felt they harvested as many birds as they had expected to in 1975, and 70.1% felt they had taken fewer migratory game birds than expected. In the two western regions, an exceptionally high number of hunters indicated they had harvested "as many" or "more" birds than expected (39%). In Quebec and the Atlantic regions, however, over three-quarters of the hunters felt they had harvested less than expected.

An important factor in harvesting birds is the kind of hunting practices or instruments hunters use (Table 4). Constructing blinds or using calls or decoys are three ways of improving a hunter's chance of success. Many of the hunters surveyed use blinds when hunting migratory game birds (62.7%), but use calls (41.7%), and decoys (47.8%) to a lesser

Table 2
Species groups pursued, by region (n = 1102)

Type of bird	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Ducks	83.2	78.0	88.5	71.0	80.6	80.6
Geese	7.0	11.4	6.8	26.4	19.4	14.0
Other migratory game birds	9.9	10.6	4.6	2.6	0.0	5.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: χ^2 = 87.50, df 8; P <0.01.

Table 3
Percentages of migratory game birds (MGB) actually harvested, by region (n = 1032)

Nos. of birds actually harvested	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
More MGB than expected	5.2	5.7	9.2	7.2	7.6	7.5
As many MGB as expected	15.9	16.7	17.8	31.9	31.2	22.4
Less MGB than expected	78.8	77.6	73.0	60.9	61.2	70.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: χ^2 = 33.38, df 8; P <0.01.

Table 4
Percentages of migratory game-bird hunters following selected hunting practices, by region, 1975–76

Hunting practices	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Using blinds (n = 1355)†	55.4	75.9	68.6	54.8	47.5	62.7
Using calls (n = 1355)†	25.9	29.3	49.8	46.4	39.1	41.7
Using decoys (n = 1355)†	40.4	37.0	52.1	57.2	54.2	49.8
Using boats (n = 1355)†	45.1	42.3	48.6	13.3	23.0	35.3
Using dog (n = 1355)†	20.5	7.4	20.1	17.5	33.5	18.3
Keeping written records of days hunted and birds harvested (n = 1459)‡	15.7	11.1	14.2	12.1	17.6	13.5
Loading own shells (n = 1478)†	12.2	7.1	19.8	8.7	10.8	12.9

*Columns do not total 100% because of multiple responses.
†Overall chi-square tests showed that differences were significant at P <0.01.
‡Overall chi square test for differences: χ^2, df 4; P >0.10.

Table 5
Hunters pursuing other consumptive wildlife activities on a migratory game-bird hunting trip, by region*

Other game hunting or sport fishing on the same trip	Respondents, by region, %†					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Often:						
other game	1.4	3.1	4.6	3.2	11.7	4.0
sport fishing	8.0	9.2	15.4	13.1	21.5	13.2
Sometimes:						
other game	15.3	6.7	18.6	15.9	24.9	15.9
sport fishing	41.9	24.8	37.5	35.9	37.3	35.6
Seldom:						
other game	9.1	7.0	19.2	14.1	14.6	14.0
sport fishing	15.7	15.6	17.5	18.6	12.9	16.9
Never:						
other game	74.2	83.3	57.6	66.8	48.8	66.1
sport fishing	34.4	50.4	29.6	32.4	28.3	34.3

*Sport fishing (n = 1429); hunting other game (n = 1441).
†Overall chi-square tests showed that differences were significant at P <0.01.

extent. Other practices, such as using boats or dogs, can greatly facilitate the retrieval of killed birds. Only 35% of Canadian hunters use boats, although in the three eastern regions over 42% use boats when hunting migratory game birds. Dogs are used by just over 18% of the hunters. BC hunters (33.5%) tend to use dogs much more than those in the other regions, especially Quebec, where they are used by only 7%. Sellars (1974) has shown that hunters who use dogs retrieve significantly more birds than those who do not, although owning a dog may increase hunting costs.

Keeping a written record of the number of days one hunts and the birds one kills can be an important element in the accuracy of hunters' responses to harvest survey questionnaires. A hunter's records can effectively minimize possible recall error, which is a desirable goal in survey research; Atwood (1956) has shown that the response of hunters to questions on their total harvest can differ by as much as 168% from their actual harvest. In Canada, ony 13.5% of all migratory game-bird hunters actually keep records of their activity and harvests, with little regional variation.

Hunters who load their own shells (Table 4) may save money or ensure some extra degree of ammunition reliability, but the practice is perhaps a better indicator of the commitment of some hunters to migratory game-bird hunting, a topic to be discussed in Section 6. Loading shells introduces an additional time factor to hunting, and may reflect the affinity of hunters to the sport, their anticipation of the forthcoming season, or their experience as hunters — which may in turn be related to their level of success. Close to 13% of Canadian hunters actually load their own shells. Nearly 20% of Ontario's hunters do so.

A final characteristic of hunter activity is the practice of pursuing other consumptive, wildlife-related activities on a single game-bird hunting trip (Table 5). Success in these other activities can perhaps add satisfaction to the overall hunting experience, or at least act as a consolation if migratory game-bird hunting is poor.

Hunters are more inclined to hunt other game rather than to fish while on a migratory game-bird hunting trip. Two-thirds (66.1%) indicated that they "never" fish and hunt migratory game birds on the same trip, but only 34.3% indicated that they "never" hunt migratory game birds and other game on the same trip. Approximately the same number "seldom" hunt other game or fish on the same trip. The same general trends are seen in all regions, with some exceptions: hunters in BC are most inclined to hunt other game (51.2%) or fish (71.7%) while on a migratory game-bird hunting trip. The inverse is true for hunters in the Atlantic (16.7% fishing and 65.6% hunting other game).

2. Reasons for hunter inactivity

Some buyers of migratory game-bird permits choose not to hunt. Although a small proportion of people who are non-hunters buy permits to support the work of the CWS, many hunters are unable or unwilling to hunt during a season for other reasons (see Filion 1980*a*). Revealing the reasons why some hunters are inactive can help managers to understand fluctuations in the size of the hunter population. Table 6 shows the proportion of 1975 permit buyers who did not hunt in that year, and their reasons for not hunting. Over a quarter of all permit holders were inactive during the 1975 season. Most of the regions had similar levels of inactivity, with the exception of BC (47.6%) and Quebec (32.7%). "Family or other obligations" was the major reason given for not hunting (34.6%), followed by "very few birds" (15.0%), and "friends didn't hunt" (12.5%). These

Table 6
Percentages of permit holders who did not hunt in 1975–76 and their reasons for not hunting, by region

Inactive hunters and their reasons	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
(a)						
Permit holders who did not hunt in 1975 (n = 1541)	29.3	32.7	24.5	24.4	47.6	28.2
(b)						
Reasons for inactivity (n = 406)						
Age or health	6.2	7.4	10.1	9.1	3.7	8.0
No place to hunt nearby	6.1	6.1	9.7	10.7	14.6	9.4
Friends didn't hunt	14.1	8.6	15.5	10.5	13.4	12.5
Cost too much	10.9	5.6	0.0	5.9	2.4	4.4
Family or other obligations	33.5	36.0	36.1	34.0	31.6	34.6
Too dangerous	2.4	0.0	5.0	1.5	0.0	2.2
Very few birds	18.6	13.7	13.1	13.9	19.2	15.0
Overcrowding	2.3	14.8	5.5	3.4	3.8	5.9
Other reasons	5.9	7.8	5.0	11.0	11.5	8.0

*Overall chi-square tests showed that differences were significant at $P < 0.10$.

Table 7
Hunting migratory game birds as much as expected in 1975–76, by region (n = 1095)

Hunting expectations	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
More than expected	5.5	3.9	7.9	6.7	5.1	6.4
As expected	27.8	22.7	32.2	33.1	33.7	30.5
Less than expected	66.7	73.4	59.9	60.2	61.2	63.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi square test for differences: $\chi^2 = 12.62$, df 8; $P < 0.13$.

Table 8
Reasons for hunting migratory game birds less than expected in 1975–76, by region (n = 674)

Reason	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Age or health	0.9	0.0	1.1	2.3	7.3	1.6
No place to hunt nearby	10.5	18.4	10.6	15.0	9.1	13.1
Friends didn't hunt	4.4	4.5	7.8	6.3	4.5	6.1
Cost too much	4.8	1.1	2.7	9.9	1.2	4.7
Family or other obligations	30.8	26.5	42.6	40.9	44.4	37.7
Very few birds	35.5	23.1	23.1	16.3	28.6	23.3
Overcrowding	9.5	15.5	10.7	5.9	3.3	9.6
Other reasons	3.6	10.9	1.3	3.4	1.5	3.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi square test for differences: $\chi^2 = 81.96$, df 28; $P < 0.01$.

Table 9
Percentages of 1975–76 migratory game-bird hunters who planned to hunt in 1976–77, by region (n = 1499)

Plan to hunt in 1976	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Yes, definitely	52.0	56.9	63.3	54.9	61.6	58.3
Yes, probably	36.6	34.8	31.5	38.0	26.8	34.2
Probably not	8.6	7.7	5.1	6.2	10.0	6.7
Definitely not	2.0	0.5	0.0	0.9	1.6	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi square test for differences: $\chi^2 = 24.38$, df 12; $P < 0.05$.

three reasons accounted for more than 62% of all inactive permit holders. Each of the remaining reasons was given by less than 10%. Although there are some variations in this trend across Canada, few are statistically significant. Two notable exceptions are the comparatively large number of Atlantic and BC hunters who indicated "very few birds" (18.6 and 19.2%, respectively).

Another aspect of hunter inactivity is the extent to which hunters are inactive during a season. In this survey, we asked hunters if they hunted as often as expected during 1975 (Table 7). A majority (63%) hunted less than expected in 1975. Only 6.4% hunted more than expected, and only 30.5% of the hunters were as active as they had expected to be during the season.

Table 8 reports the reasons hunters gave for hunting less than expected in 1975. There are some similarities between the reasons hunters chose for *not* hunting in 1975 (Table 6) and the reasons given for hunting less than expected in that year. "Family obligations" (37.7%) and "very few birds" (23.3%) were again the first and second most important reasons. Having "no place to hunt nearby" (13.1%)

and "overcrowding" (9.6%) ranked third and fourth. The remaining reasons accounted for not more than 10% of the respondents. "Family or other obligations" and "very few birds" were the first and second most important reasons for hunting less in every region except the Atlantic, where hunters indicated the latter as the major reason. "Having no place to hunt nearby" was the third most important reason for every region except Ontario, where it ranked fourth behind "overcrowding". The problem of overcrowding tended to be more pronounced in eastern Canada, especially Quebec (15.5%), than in the west. The other reasons given accounted for less than 10% of the respondents in each region.

Further information on hunter inactivity was obtained by questioning hunters on whether or not they planned to hunt during the next season (Table 9). A majority (92.5%) "definitely" or would "probably" hunt in 1976. There were few differences among the regions on the basis of this variable: in each region, close to 90% of the respondents indicated that they either "definitely" or "probably" planned to hunt in 1976–77. The reasons given for not planning to hunt migratory game birds in 1976–77 are somewhat different from those seen in Tables 6 and 8. On the national level, three reasons emerged as being consistently more important than the rest: "family and other obligations" (19.9%), "other reasons" (18.6%), and "no place to hunt nearby" (17.2%) (a table on these data was not included because of insufficient response in each region).

The Atlantic region stands out from the others in terms of the reasons its hunters give for inactivity. It had the lowest success rate and the lowest mean waterfowl kill for the 1975–76 season, and had the highest proportion of hunters who indicated "very few birds" as a reason for not hunting in that season, and who also gave "very few birds" as the most important reason for hunting less than they had expected to.

3. Discussion

Three main reasons for hunter inactivity can be identified on the basis of the data provided in this section. The most important reason relates not to hunting or wildlife, but rather to the obligation of hunters to their families or other responsibilities. The second most important reason is that there are fewer birds than hunters expect to find. The third reason relates to hunting site problems such as their distance from hunters' homes, and overcrowding.

This section has explored some of the reasons why hunters do not hunt, but has not addressed the factors that explain hunter activity. In spite of the fact that many hunters neither achieve their expected harvest nor engage in the expected amount of activity, a majority were active in 1975–76 and planned to hunt again in the next year. What are the reasons for this behaviour on the part of hunters? Clearly, activity and harvests lead to satisfactions that are a reflection of the benefits accruing to hunters. The remainder of this report examines variables that influence both the satisfactions and problems hunters encounter, beginning with the issues related to migratory game-bird hunting sites.

Section 3:

Access to hunting sites

Land and water provide essential habitat for wildlife populations: a place to shelter, feed, and reproduce. Hence the protection of habitat is integral to the protection of wildlife species. A game-bird hunter must have access to land; access that is not only lawfully and potentially productive but also suited to his or her need to be some distance from other people or to the time he or she is willing to spend travelling. If any one of these criteria is met at the expense of another, the quality of the hunter's experience will, to some extent, diminish. This section presents data on the type of land migratory game-bird hunters use as hunting sites and the problems encountered in gaining access to it.

1. Sites used for migratory game-bird hunting

Canada's geography influences many access variables. Table 10 reports the most obvious geographical variable, the average distance hunters travel to selected hunting sites. On average, Canadian hunters went 109.9 km to the site where they do most of their hunting, and 188.6 km to the farthest site at which they hunt. The latter distance represents an increase of 78.7 km, or 71.6% over the former. As one moves from east to west, the average distance driven to most frequented hunting sites increases significantly: BC hunters (338.7 km) travel about three times the distance of the Canadian average, and just under eight times that travelled by Atlantic hunters (44.7 km). The recent percentage increase between the distances to the site where most of the hunting occurred and the farthest hunting site visited, however, was actually lowest for hunters in BC (46.0%) and highest for those in Ontario (119.0%).

The types of land hunters used for hunting in 1975–76 are reported in Table 11. Private land was the type of land most often used by Canadian hunters in 1975 (50.2%);

Table 10
Average distance (km) travelled by migratory game-bird hunters from their residence to selected hunting sites, by region (n = 1070)

	Mean distance (km), by region					
Hunting sites	Atlantic	Que.	Ont.	Prairies	BC	Canada
(*a*) where most hunting occurred*	44.7	56.6	83.0	99.0	338.7	109.9
(*b*) Farthest site visited†	71.3	99.4	181.8	169.4	494.4	188.6
(*c*) % increase of *b* over *a*	59.0%	75.7%	119.0%	71.3%	46.0%	71.6%

*One-way analysis of variance for differences: F = 22.36, df 4, 1016; P <0.01.
†One-way analysis of variance for differences: F = 19.26, df 4, 1062; P <0.01.

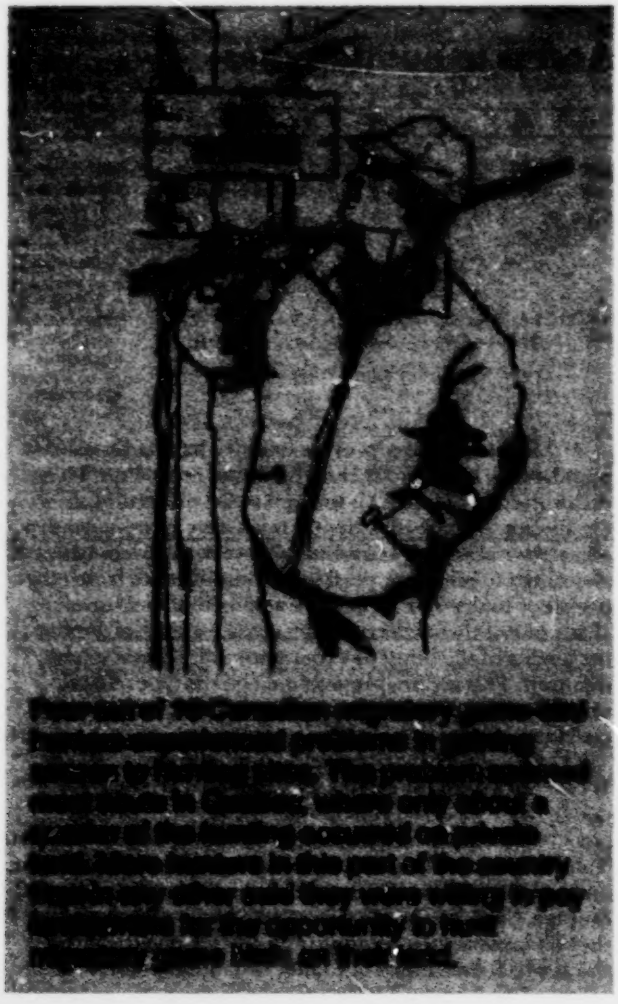


Table 11
The type of land on which most time was spent hunting in 1975–76, by region (n = 1088)

Kind of land	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Own land, private club or preserve†	3.6	6.5	7.5	4.2	2.5	5.5
Friend's or relative's land	9.9	16.6	28.4	32.1	19.2	24.7
Other private land	5.8	5.1	14.3	40.6	22.8	20.0
Total private land	19.3	28.2	50.2	76.9	44.5	50.2
Public or government land	68.5	70.2	47.4	21.6	52.2	46.4
Other or don't know†	12.3	1.7	2.2	1.4	3.3	3.3

*Overall chi-square test for differences: χ^2 = 281.0, df 16; P <0.01.
†Categories combined due to insufficient number of observations.

Table 12
Problems in gaining access to land for hunting migratory game birds, by region (n = 1476)

Frequency of access problems	Respondents, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Often	5.2	28.8	9.1	8.3	13.0	11.7
Sometimes	19.9	38.4	33.7	33.4	37.5	32.8
Seldom	20.4	17.5	28.1	38.2	31.1	28.5
Never	54.5	15.4	29.2	20.1	18.4	27.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi square test for differences: χ^2 = 193.78, df 12; P <0.01.

Table 13
Percentages of hunters who feel landowners should have the right to prevent access to their property, by region (n = 1472)

Landowner's right to prevent access	Respondents, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Yes	58.9	41.2	87.5	83.9	89.6	75.4
No	18.9	37.2	3.1	8.4	5.9	12.4
No opinion	22.1	21.6	9.4	7.7	4.5	12.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi square test for differences: χ^2 = 275.38, df 8; P <0.01.

Table 14
Willingness to pay landowners for the opportunity to hunt migratory game birds on their land, by region (n = 1475)

Willingness to pay	Respondents, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Yes	30.9	59.6	53.1	29.6	49.7	44.1
No	49.6	27.7	32.9	57.7	41.2	42.1
No opinion	19.5	12.7	14.0	12.6	9.1	13.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi square test for differences: χ^2 = 107.05, df 8; P <0.01.

it was comprised of land belonging to friends or relatives (24.7%), "other" private land (20.0%), and land owned by oneself or a private club, or designated as a preserve (5.5% altogether). Forty-six percent hunted on public land, and under 4% used another type of land, or did not know what type of land they hunted on. Public land was hunted on most often in every region except Ontario (47.4%) and the Prairies (21.6%), where private land was more popular. In Quebec (70.2%) and the Atlantic region (68.5%) more hunters used public land, although a comparatively higher percentage of Atlantic hunters hunted on other types of land, or did not know what type they used (12.3%).

2. Access problems

Gaining access to hunting sites is a problem for some migratory game-bird hunters (Table 12). Almost half (44.5%) indicated that they "sometimes" (32.8%) or "often" (11.7%) had access problems. Others reported having problems "seldom" (28.5%) or "never" (27.0%). Two notable regional exceptions are Quebec, where 28.8% reported having access problems "often", and the Atlantic region, where considerably fewer hunters reported "often" having difficulties (5.2%).

Related to the problem of finding land suitable for hunting is the decision of some landowners to prevent access to their property. Hunter attitudes toward this are reported in Table 13. A majority (75.4%) felt that landowners should have the right to prevent access to their property. Quebec (37.2%) and Atlantic (18.9%) hunters were least in favour of allowing landowners this right. Both Quebec and the Atlantic region also had the highest proportion of hunters who had no opinion on this issue.

A somewhat different response pattern emerged from the question of paying landowners for the use of their land (Table 14). Just under half (44.1%) of the hunters surveyed indicated that they would be willing to pay landowners for the opportunity to hunt migratory game birds on their land. Nearly as many (42.1%) indicated that they would not

be willing, and 13.8% had no opinion. Prairie and Atlantic hunters were much less inclined to pay landowners than were their Quebec counterparts, who were the most willing group in this respect. The Atlantic region also had the highest proportion of hunters (19.5%) who had no opinion on the issue of paying access fees.

3. Discussion

We have seen in this section that Canadian hunters hunt on private and public land, and just under half tend to have access problems at least some of the time. A majority would allow landowners the right to prevent access to their land, but are equally divided on the issue of paying landowners for the opportunity to hunt on their land.

The Quebec region stands out from the others in this section. Most Quebec hunters use public land (70.2%), and have more access problems than other regions. A high proportion of Quebec hunters (37.2%) were not in favour of allowing landowners the right to prevent access, which may be an indication of an emerging management issue. This problem is offset somewhat by willingness among Quebec hunters to pay landowners for the opportunity to hunt migratory game birds on their land (59.6%). This may point to one possible solution to the problems facing the hunters in this region. Quebec's access problems may subsequently have been influenced in part by a 1978 Quebec government decision to abolish the holding of large tracts of land by private clubs. This may mean that our findings are inaccurate today.

This survey has only taken the hunter's standpoint into account. It is important to look also at the views of landowners toward hunters, the breakdown of public and private land holdings, and land use data. An extensive study would be able to include several variables in the access equation, and might point to specific causes or solutions.

In Section 2, "having no place to hunt nearby" was given as the third most important reason hunters chose not to hunt in 1975, and was also the third most important reason for not planning to hunt in 1976. The amount of time spent and the distance travelled to reach hunting sites translate into hunter costs. Travel-related costs may have some influence on hunter activity; in BC, travel costs may be several times greater than in the Atlantic, and may possibly be a factor in the observed decline in sales of migratory game-bird permits in that Province over the last few years (Cooch *et al.* 1978:28).

Although there are regional variations, Canadians on average probably spend two or more hours travelling by land vehicle to the site where they do most of their hunting, and five or more to the farthest site they visit. Travelling these distances several times a year would result in considerable costs to some hunters. It is difficult, however, to determine how much of the time or distance is a result of having to travel beyond urban sprawl or surrounding agricultural areas, or having to search for new hunting areas due to the depletion, destruction, crowding, or lack of success in closer hunting sites. An important factor in determining the severity of any problems in gaining access to hunting sites is the extent to which conditions change over time. By monitoring access variables over time, it would be possible to compare the nature and frequency of access problems with a) changes in the residency of hunters, b) changes in the type of land they hunt on, or c) changes or developments within bird populations and their habitat. A trend analysis of this sort would enable managers to determine the causes or potential trends in access-related problems, especially those that affect hunter activity or the well-being of wildlife habitat areas.

Section 4:

Economic values

One of the questions frequently asked by wildlife managers today is "how much is wildlife worth?". Although it is very difficult to determine the worth of a wild animal, it is possible to obtain a measure of the value people place on wildlife-related activities. This information can be used to determine which activities produce the greatest economic benefits to society, in order to assign or select policies or programs that will ensure public participation in them. In this sense, value data can also be used to illustrate one aspect of the importance of protecting certain wildlife species and vital habitat areas.

There are at least three complementary approaches that can be used to assess the importance of wildlife to humans. One is to ask people if they participate in any wildlife activity, or if they would like to participate in one. Data on the extent or frequency of participation can help managers assess the demand for wildlife. The information provided in Section 2 is an example of the type of data one would use in this approach. A second approach is to measure people's feelings about wildlife and wildlife activities. The data obtained using this approach would be largely social-psychological in nature, and could help managers understand attitudes toward wildlife, and perhaps how people are predisposed to act toward the resource. A third way of evaluating wildlife is to measure the economic worth of human participation in wildlife activities. This section focuses on this approach to wildlife evaluation as it pertains to hunting migratory game birds, and discusses the usefulness of these data to wildlife managers.

1. Hunter expenditures and consumer surpluses in 1975–76

To arrive at an economic value of migratory game-bird hunting, data on hunter expenditures and their consumer surpluses are needed. *Expenditures* consist of the amount of money actually spent by individuals in the pursuit of migratory game-bird hunting. Some people feel that the activity is worth more than what it actually cost them. The difference between the amount of money people feel migratory game-bird hunting is worth and the amount they have actually spent is referred to as a *consumer surplus*. The total amount they would be willing to pay to be able to hunt is called the *gross value* of the activity. It can be represented in dollars and is the sum of consumer surplus and expenditures.

The amount of money spent on migratory game-bird hunting in 1975–76 and the reported maximum willingness to pay (gross value) for hunting are shown in Table 15. Canadian hunters spent an average of $138 during 1975–76

Table 15
Per-capita expenditures (*a*), gross values (*b*), and consumer surplus (*c*) for migratory game-bird hunting in 1975, by region

Type of value	Mean dollar values per hunter*, by region					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
(*a*)						
Actual cost in 1975† (n = 1113)	111	143	130	142	162	138§
(*b*)						
Maximum willingness to pay ‡ (n = 930)	170	193	212	202	247	207¶
(*c*)						
Consumer surplus (*b* minus *a*)	59	50	82	60	85	69
(*d*)						
% increase of *b* over *a*	53.2%	35.0%	63.1%	42.2%	52.5%	50.0%

*Rounded to nearest dollar.
†One-way ANOVA for significant differences: F = 2.09, df 1089; P <0.10.
‡One-way ANOVA for significant differences: F = 2.24, df 909; P <0.10.
§SE is $4.30.
¶SE is $5.80.

Table 16
Estimates of expenditures (*a*), gross values (*b*) and consumer surplus (*c*) for all licensed migratory game-bird hunters in 1975, by region

Type of value	Estimates for total hunter population*, in millions of 1975 dollars					
	Atlantic	Que.	Ont.	Prairies	BC	Canada†
(*a*)						
Actual cost	4.9	7.4	14.9	21.8	2.8	52.6
(*b*)						
Maximum willingness to pay	7.5	10.0	24.4	31.0	4.2	78.9
(*c*)						
Consumer surplus	2.6	2.6	9.4	9.2	1.4	26.3

*Estimates of values are computed as the product of the means from Table 10 and from the 1975 estimates of active hunters in Cooch (1976).
†Excludes active hunter population of the Yukon and Northwest Territories. Because of the disproportionate sample design, the approximate caseweights used and some rounding error in the means, the sum of the regional values differs slightly from the Canada total.

and would have been willing to spend up to an average of $207 before deciding to stop hunting that season. Their maximum willingness to pay was an average of 50% higher than their hunting costs and varied significantly by region. The difference between gross value and hunting costs yielded a mean consumer surplus of $69. Consumer surpluses were highest in BC ($89) and Ontario ($82), and lowest in Quebec ($50). A note of caution about these data needs to be expressed. Bishop and Heberlein (1979) have shown that values obtained using an approach similar to the one employed in this survey are very conservative and should be treated strictly as minimum estimates. Also, because the questionnaire did not question hunters on the sources of expenditures, some recall bias may be present in these data, which may also result in underestimates.

Estimates of the total gross value of migratory game-bird hunting are contained in Table 16. The amount of money spent by licensed hunters in the 1975–76 season is estimated at just over 52 million dollars. The Prairies and Ontario account for almost 70% of expenditures. Maximum willingness to pay is estimated at 78.9 million dollars. The difference between this value and hunter expenditures yields a total consumer surplus of 26.3 million dollars, again with slightly more than 70% originating from Ontario and the Prairies. These should also be considered as minimum estimates because of the reasons discussed in the foregoing paragraph. There is, furthermore, one other reason why these data are conservative. To make a complete evaluation of migratory game-bird hunting, data on the *option demand value* for the activity are needed. This value is defined as the amount that people who have never hunted place on the fact that they could have hunted in 1975–76.

2. Discussion

A definitive statement of the economic value of migratory game-bird hunting in Canada is, of course, beyond the scope of this section. Detailed information on the costs of managing the migratory game-bird resource, coupled with the types of data presented or mentioned in this section, are needed in order to produce a complete statement of economic value. Fogarty *et al.* (1982) have employed this type of data in a recent benefit-cost study of Canadian waterfowl.

Although economic evaluations can be used in designing, defending, or selecting management policies or programs, selecting the economic data most appropriate for these purposes can be difficult. According to the specific needs of wildlife managers, the type of economic data required may vary. The following examples illustrate the potential usefulness of expenditure and consumer surplus data in wildlife management.

Some economists have condemned the widespread use of expenditure data by wildlife managers (see Langford and Cocheba 1978). They argue that some of the expenditures incurred by hunters may not have been necessary for hunting, or may have been incurred even if the hunter stayed at home. Restaurant meals or portable radios are examples of this type of expenditure. Some have also argued that expenditure data do not measure gains or losses in economic benefits that would be incurred if opportunities for migratory game-bird hunting increased or decreased. Nevertheless, expenditure data can serve as a crude indicator of the importance of an activity. For example, when people hear that agriculture is a multimillion dollar industry, or that automobile sales are down by several million dollars in a given quarter, they recognize these data as familiar, albeit imprecise, indicators of the economic impact of these activities. Consequently, this type of information can be extremely useful in justifying programs to assist these activities. Similarly, expenditure data may be more effective than concepts like consumer surplus or option demand value in defending or encouraging wildlife programs because they may be readily available and more familiar to decision makers.

Because they are able to provide a measure of gains or losses in economic benefits, consumer surplus data can be useful in evaluating different management alternatives. The following hypothetical example illustrates this point. An area in Canada, because of intensive suburban development, is experiencing a decline in migratory game-bird habitat. This

decline has begun to influence the number of waterfowl species that are available every year, and managers have consequently lowered bag limits on some species. A solution to this problem would require the renewal of Crown land habitats and the purchasing of private lands suitable for habitat. This solution would necessitate considerable government spending. One way of justifying this spending is to measure the consumer surplus generated by maintaining or increasing bag limits on the waterfowl species that would benefit from new or renewed habitat areas. Hunters would be surveyed to determine how much they would be *willing to pay* to have productive migratory game-bird habitats and higher bag limits. If this consumer surplus is equal to or greater than the amount needed to improve habitat, then a program of renewing and purchasing land may be seen as justifiable. Furthermore, data on willingness to pay on the part of hunters may be useful in establishing higher permit fees as one way of recovering the costs of this option.

Another use of consumer surplus data can be illustrated in the following example. In the same area in Canada, a proposal is made to build an airport on several productive acres of wetland. The loss of this migratory game-bird habitat would result in a significant depletion of hunting opportunities. A measure of the economic benefits that are lost would be to ask hunters how much they would be *willing to accept as compensation* for losing the opportunity to hunt the migratory game birds produced in this habitat area. This measure of economic worth could be contrasted with estimates of the economic benefits to be produced by the proposed airport and used along with ecological data to influence a decision on the issue. In this manner, economic data can be used to protect habitat areas from depletion.

Although economic data are only one part of assessing the value or importance of wildlife, the examples provided here illustrate the potentially influential role they can have in the politics of management. For additional insights into the economic significance of hunting in Canada, based on a more recent nationwide sample of about 100 000 Canadians, see Filion *et al.* (1983).

Section 5:

Social dimensions

Human populations, not unlike wildlife populations, experience periods of growth and decline, have some form of internal order, and can be distinguished from one another in terms of some shared characteristics among their members. Migratory game-bird hunters form a distinctive population which, like any human population, experiences "vital" processes. Its growth, for example, is dependent on recruitment, and hunter inactivity or attrition acts in much the same way as mortality. Furthermore, hunters, as social beings, bring a certain social order to the activity through shared values and norms. This section places emphasis on the social dimension of hunting, examines the role of existing hunters in the recruitment of new hunters, and provides an important social basis for the activity.

1. Hunter recruitment

Recruitment into the hunter population is vital to its stability or growth. Most hunters begin hunting quite young, as seen in Table 17, which shows the average age of hunters when they first began migratory game-bird hunting and the person with whom they first hunted. Canadian hunters were an average of 17.2 years old when they first began hunting. This finding is consistent with several US studies, which indicate that most hunters begin hunting before age 20 (Applegate 1977, Hendee and Potter 1976, Langenau and Mellon-Coyle 1980). Also like hunters in the US (Langenau and Mellon-Coyle 1980, Peterle and Scott 1977), many Canadian hunters were initiated into this activity by a parent

Table 17
Age when first began hunting migratory game birds with a gun (n = 1479) and person first hunted with (n = 1487)*, by region

	Respondents, by region, %†					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Average age when first hunted MGB with a gun‡	17.4	19.0	17.4	16.0	16.4	17.2
Person first hunted with:						
Alone	15.8	13.3	11.2	12.2	11.4	12.5
Parent	31.9	20.6	32.8	41.1	40.2	33.7
Brother or sister	12.4	15.3	12.6	10.6	12.1	12.4
Spouse	0.1	0.8	1.7	0.9	0.6	1.0
Other relatives	7.0	16.0	7.3	7.1	7.6	8.6
Close friend	26.9	38.8	34.6	27.7	26.9	31.7
Don't recall	8.3	1.3	2.4	1.8	2.6	2.9
Other	0.1	0.5	0.0	1.0	1.8	0.5

*Columns do not total 100% due to multiple responses.
†Overall chi-square tests for differences among regions showed that differences are significant at $P < 0.10$.
‡Overall one-way analysis of variance test for differences: $F = 14.05$, df 1478; $P < 0.01$.

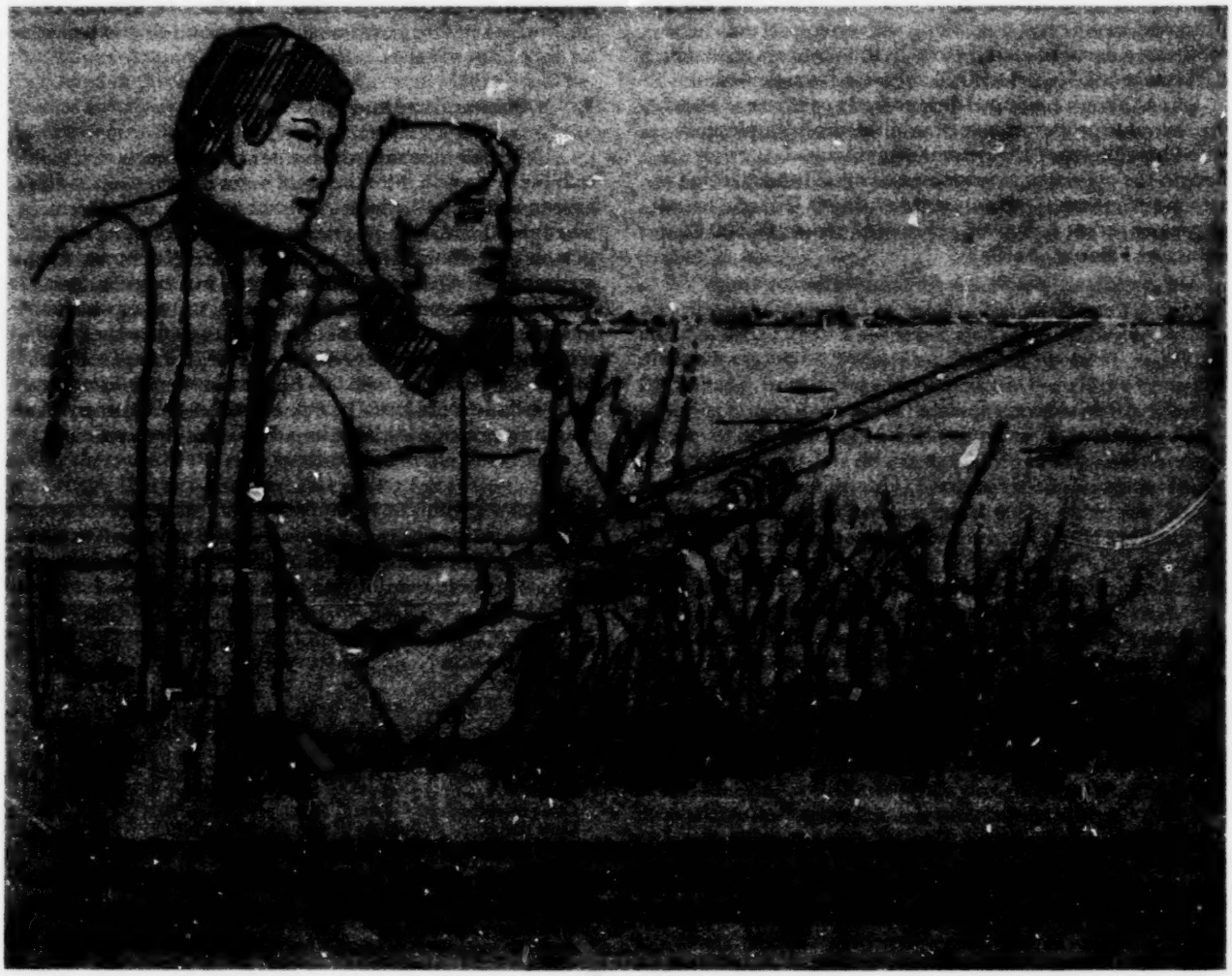
(33.7%), probably the father. This trend is most pronounced in BC and the Prairies where parents recruited at least 40% of the hunters. Close friends were also a major factor in recruiting Canadian hunters (31.7%). This is especially true in Quebec and Ontario, although, in the case of Quebec, other relatives also figured prominently in recruitment.

Hunters are initiated by other hunters, especially individuals who are either related to or socially intimate with them. Being part of a network of hunters is an important factor in recruitment. This is demonstrated further in Table 18, which reports the proportion of hunters with friends or relatives who hunted migratory game birds when they first started hunting. For all of Canada, 95.5% had friends or relatives who hunted at that time. Close friends were indicated by most hunters (54.0%), followed by parents (39.9%), other relatives (30.2%), and brothers or sisters (27.2%). A similar trend is seen in the regions.

2. The hunter network

Beyond the process of recruitment, the hunter network is an integral part of migratory game-bird hunting. One aspect of this is seen in Table 19, which shows the characteristics of hunting parties. Most hunters (76.4%) tend to hunt in parties comprised of three or four persons on average. Members of these groups include close friends (77.9%), immediate family (31.0%), and other relatives (21.0%). Very few hunting parties include people who are either acquaintances (5.0%) or strangers (0.3%). Although considerably fewer Atlantic hunters tend to hunt in parties, a striking aspect of the data is the similarity among regions in the relationship of hunters to other members of their parties: close friends and family — people who have an established relationship with one another — are important party members. In this respect, the activity of hunting takes on an important social dimension, where camaraderie between hunters can encourage their commitment to the sport and the satisfaction they obtain from it.

Another aspect of hunting, which extends even beyond the actual hunting group, is the proportion of hunters who know someone else who hunts migratory game birds (Table 20). Once again the importance of intimates can be seen. Friends (71.5%) and relatives other than the immediate family (30.7%), followed by siblings and other members of the immediate family form the extended social basis of migratory game-bird hunting. This pattern remains essentially the same across Canada.



Another question in this survey asked if hunters knew anybody who did not approve of their sport. About 30% of the hunter population knew someone who strongly disapproved of migratory game-bird hunting. Of the hunters, 61% had acquaintances who disapproved, 20.6% close friends, 10.8% spouses, 10.5% other relatives, 6.4% brothers or sisters, 5.9% parents, and 4.8% had children who disapproved. Hunters have close relationships with more people who approve than disapprove of migratory game-bird hunting and therefore probably receive more encouragement than discouragement about their participation in the sport. A table with regional breakdowns on these data was not included because of an insufficient number of observations.

Table 18
Percentages of hunters with relatives or friends who hunted migratory game birds (MGB) when they first started hunting*, by region

	Respondents, by region, %†					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
% having at least one friend or relative who hunted MGB	90.4	95.6	96.3	97.4	94.4	95.5
Relationship:						
Parent	40.8	26.8	41.2	43.1	47.9	39.9
Brother or sister	28.4	23.9	27.8	27.2	29.1	27.2
Spouse	0.9	0.0	2.5	0.9	0.0	1.2
Other relatives	24.9	29.0	30.2	33.8	28.7	30.2
Close friend	42.1	54.4	62.7	50.7	48.6	54.0
Don't recall	10.7	4.6	3.8	2.9	4.6	4.6
Other	0.7	2.3	0.6	0.8	1.8	1.0

*Columns do not total 100% due to multiple responses.
†Overall chi-square tests for differences are significant at $P < 0.10$.

Table 19
Characteristics of party hunting among migratory game-bird hunters (n = 1171)

Party characteristics	Respondents, by region					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Proportion of respondents hunting in a party*	59.8%	76.7%	77.3%	82.1%	79.8%	76.4%
Mean party size†	(3.1)	(3.1)	(3.6)	(3.5)	(3.1)	(3.4)
Party composition:‡						
Immediate family*	25.9%	34.6%	29.1%	32.2%	34.8%	31.0%
Other relatives*	18.1	12.2	26.5	21.6	16.5	21.0
Close friends*	77.7	65.9	80.8	81.2	77.5	77.9
Acquaintances*	3.1	4.7	3.8	7.8	3.0	5.0
Strangers*	0.5	0.6	0.0	0.4	0.0	0.3

*Overall chi-square tests for differences are significant at $P < 0.01$.
†One-way ANOVA for differences among regions significant at $P < 0.01$.
‡Party composition columns do not total 100% because of multiple responses.

Table 20
Proportion of hunters knowing other people who hunt migratory game birds*, by region (n = 1417)

Relationship to respondent	Respondents, by region†					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Parent(s)	15.7	15.2	18.6	18.0	18.1	17.4
Brothers or sisters	34.1	35.7	27.1	29.9	25.0	30.0
Spouse	2.1	5.6	4.4	3.1	4.9	4.0
Children	12.0	9.0	13.0	14.6	21.2	13.3
Other relatives	28.7	25.0	33.8	32.2	26.8	30.7
Friends	67.0	63.6	78.8	70.2	67.8	71.5

*Columns do not total 100% because of multiple responses.
†All overall chi-square tests showed that differences are significant at $P < 0.01$.

3. Discussion

Perhaps the most important finding in this section is the fact that the social dimension of migratory game-bird hunting can be a major source of benefits to the hunter, in that it provides a basis for interaction among people. Most hunters are recruited before the age of 20, hence the skills they acquire and their behaviour and attitudes toward hunting can be conditioned by those who recruit them. This provides an opportunity for parents who initiate their children into hunting to communicate a set of values to their offspring. Aside from merely being introduced to a sport, the young hunters are also introduced to a tradition that is often familial. Moreover, individual initiates are also exposed to a broader network of hunters, from whom hunting companions are drawn and with whom experiences, symbols, and sentiments can be shared. In this sense, much of the meaning of hunting is manifested socially. On a more practical level, hunting with a group of people can also provide the incentive to go hunting, and can make a trip enjoyable even when plagued with poor hunting conditions. This may be important in maintaining a hunter's commitment to the activity, a topic to be discussed in Section 6 of this report, and may also contribute to maintaining stable hunter populations over the years.

Information on the social dimension of hunting can be important in wildlife management. Knowledge of recruitment practices, e.g. the age of recruitment and the people who do the recruiting, is useful in selecting methods of hunter education, such as pamphlets for parents of novice hunters, or literature on hunting suitable for individuals in their mid- to late teens. Changes in the nature of recruitment, for example a change from parents to peers as dominant recruiters, would probably require a change in the approach to hunter education. Through effective information services, young hunters can be made aware of the impact poor hunting practices have on wildlife populations. Another important result of understanding the social impact of hunting is that it enables management to view hunting and the benefits derived from it as dependent less on the harvest of birds than on the non-consumptive elements of the activity.

Section 6:

Indicators of commitment

Section 4 of this report looked at the expenditures made by hunters as one way of determining the value they place on the activity. There are, of course, other ways of measuring value. Although a dollar-value is perhaps the easiest type of value to discuss, it is clear that the worth of something can also be based on the degree of satisfaction obtained from it, or conversely, the problems or dissatisfactions associated with it. Ultimately the value placed on migratory game-bird hunting is the degree of commitment to it. Would it be abandoned readily? Does one remain attached to it over several years?

Commitment can also be seen as a reflection of the benefits migratory game-bird hunting provides. Strong indications of commitment can suggest that hunter benefits are high. If such indications correspond with healthy bird populations, then it could perhaps be concluded that management programs have been effective. This section examines several indicators of hunter commitment. It reports data on the number of years people have hunted and the other types of hunting they pursue, and attempts to illustrate how hunters value migratory game-bird hunting more highly than other activities.

1. The number of years hunters have hunted

One indicator of commitment is the number of years hunters have been hunting migratory birds. Table 21 shows the average number of years that have elapsed since hunters first began hunting migratory game birds with a gun, and the actual number of years they have hunted. On average, Canadian hunters in this survey have been hunting for 15.6 years. An average of approximately three seasons were missed, making the actual average number of years hunted 12.2. By dividing the actual number of years hunted by the number of years that have elapsed since their introduction to hunting, a consistency function can be determined. For all of Canada, hunters have hunted 78.2% of the potential number of seasons that have elapsed since they first began hunting migratory game birds. Across the regions, there are few differences in this respect, although BC hunters have been hunting comparatively longer (21.1 years) and have a somewhat lower "seasons hunted" percentage (75.8%). There appears to have been a tendency for hunters to hunt most seasons in the years leading up to 1975.

Table 21
Average number of years elapsed since first hunting, and the actual number* of years hunted by migratory game-bird (MGB) hunters, by region

	Average number of years, by region					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
(*a*) Average number of years elapsed since first hunting MGB with a gun†	13.9	11.9	13.7	17.6	21.1	15.6
(*b*) Actual number of years hunted‡	10.9	9.3	11.2	13.4	16.0	12.2
(*c*) Consistency function (*b*/*a*)	78.4%	78.2%	81.8%	76.7%	75.8%	78.2%

*Calculated by subtracting the reported number of seasons missed from the number of years hunted by each hunter.
†One-way ANOVA for differences: $F = 12.82$, df 4, 1207; $P < 0.01$.
‡One-way ANOVA for differences: $F = 7.77$, df 4, 1207; $P < 0.01$.

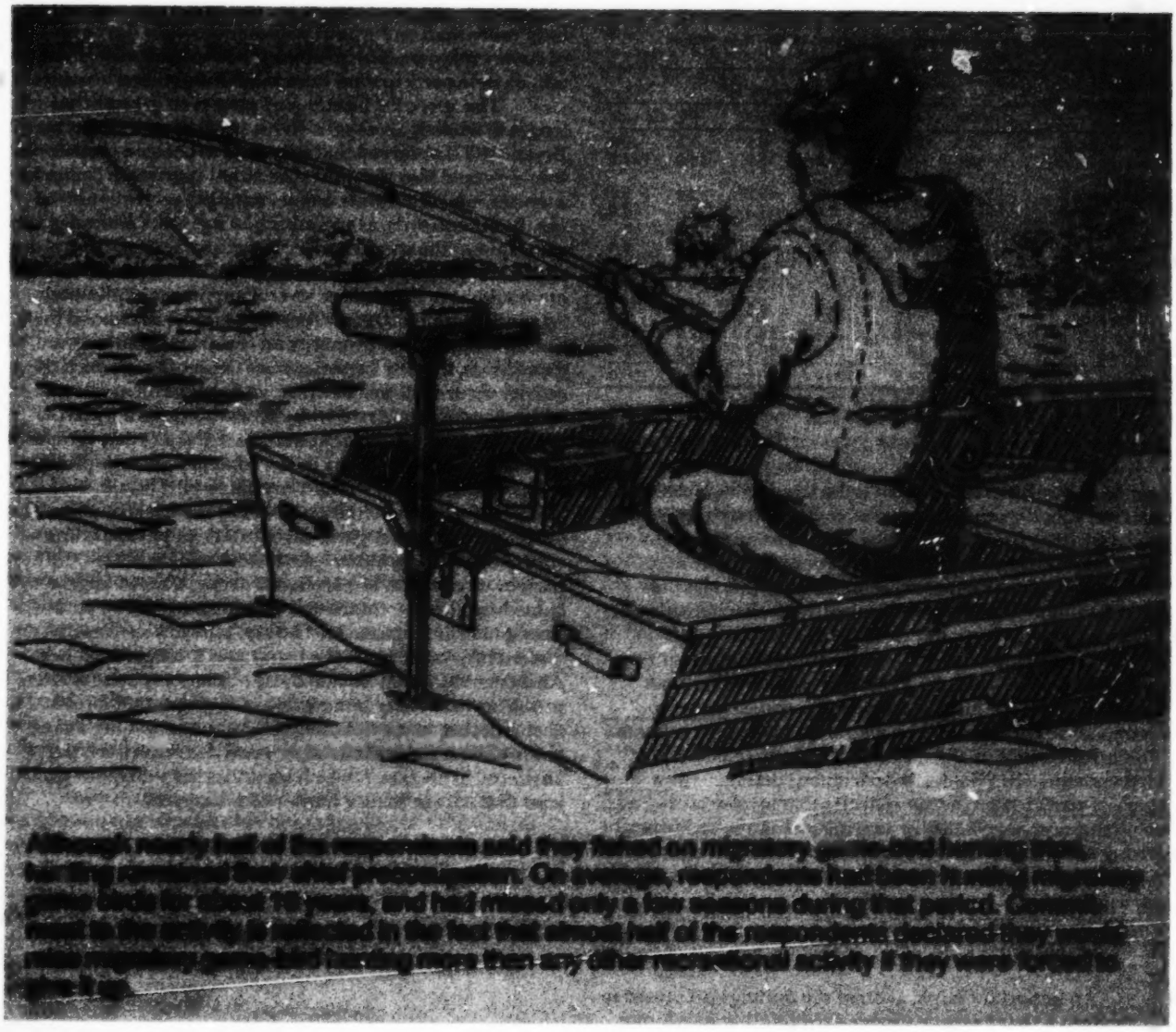
Table 22
The importance of migratory game-bird (MGB) hunting to hunters, by region ($n = 1464$)

If you had to give up MGB hunting, how would you feel?	Respondents, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Would miss it more than any other recreational activity	43.6	55.8	45.4	37.7	45.7	44.6
Would miss it but less than other recreational activities	41.5	38.1	43.2	51.6	44.6	44.7
Would probably not miss it very much	14.9	6.1	11.4	10.7	9.7	10.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: $\chi^2 = 27.29$, df 8; $P < 0.01$.

2. The importance of migratory game-bird hunting to hunters

Another indicator of hunter commitment is shown in Table 22, which reports responses to the question "If you had to give up migratory game-bird hunting, how would you feel?". Hunters are a divided group in terms of the importance migratory game-bird hunting has over other activities: 45% reported that they would miss migratory game-bird hunting more than any other recreational activity; another 45% would miss it, but less than other activities; and only 10% would probably not miss it very much. Quebec hunters are more inclined to feel that they would miss migratory game-bird hunting more than other activities (55.8%). Prairie hunters would miss it less than other recreational activities they now have (51.6%). The Atlantic region has the largest number who feel they would not miss migratory



game-bird hunting very much if they had to give it up (14.9%).

In Section 5 it was suggested that the migratory game-bird hunter population experiences "vital" processes that influence its growth and decline. Another process that can influence the size of this population is the movement of hunters into or out of it during a season, or over several seasons. This process can have some impact on the number of hunters who are active in a given year and, consequently, can have an impact on the number of birds harvested. Perhaps the most important factor in determining whether a hunter will be more or less active is the commitment he has to migratory game-bird hunting. The commitment or importance assigned to migratory game-bird hunting is contingent on many things, such as the priority it is given over other things that demand the hunter's time, or his ability to replace it with another recreational activity. Depending on his priorities, opportunities, or preferences, an individual's commitment to migratory game-bird hunting can increase or decrease.

It is evident in the data reported in Table 22 that some migratory game-bird hunters pursue other recreational activities that are more important to them. This is seen more explicitly in Table 23, which shows the preferred consumptive activities of migratory game-bird hunters in 1975. Several individuals indicated that they participated in other consumptive activities, but were not a homogenous group in terms of their preferred orientation. Only 33.5% preferred hunting migratory game birds over the other activities re-

Table 23
Preferred consumptive recreational activity in 1975–76, by region (n = 1353)

Consumptive activity	Respondents, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Hunting migratory game birds	36.7	36.1	25.4	40.4	32.8	33.5
Hunting small game	20.4	25.2	20.5	7.3	9.2	16.6
Hunting big game	26.1	15.9	32.3	26.5	34.8	22.4
Sport fishing	16.7	22.7	21.8	25.8	23.2	22.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: $\chi^2 = 75.61$, df 12; $P < 0.01$.

Table 24
Preferred non-consumptive recreational activity, 1975–76, by region (n = 1105)

Preferred non-consumptive activity	Respondents, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Bird watching	10.3	24.5	6.6	6.6	5.2	10.2
Watching other wildlife	30.6	4.1	29.3	33.9	36.0	26.8
Bird feeding	1.9	5.0	8.9	2.7	2.2	5.1
Feeding other wildlife	1.0	1.4	0.0	1.8	1.6	1.0
Photographing birds	1.3	5.6	1.7	1.6	2.3	2.4
Photographing other wildlife	2.5	1.56	1.7	6.3	8.1	3.5
Visiting zoo	0.8	9.6	2.5	2.9	1.4	3.6
Hiking	33.8	30.0	17.1	23.4	32.3	24.5
Canoeing	17.7	18.2	32.4	20.7	10.9	23.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: $\chi^2 = 220.28$, df 32; $P < 0.01$.

ported in this table. Although it is the largest single category, it is clear that the other categories, comprised of hunting big game (27.4%), sport fishing (22.5%), and hunting small game (16.6%) account for a larger proportion of hunters. Considerably fewer Ontario permit holders (25.4%) preferred migratory game-bird hunting over other activities in 1975.

Participation rates in non-consumptive outdoor activities are shown in Table 24. Watching wildlife other than birds (26.8%) is the most preferred non-consumptive recreational activity pursued by migratory game-bird hunters. This is followed by hiking (24.5%), canoeing (23.1%), and bird watching (10.2%). It is worth noting that the lowest levels of participation are in activities that involve attracting or photographing wildlife or viewing animals in an artificial setting. By contrast, activities directly associated with nature appreciation or observing wildlife show the highest levels of participation.

3. Discussion

An important implication of the findings presented in this section is that migratory game-bird hunting is only one of several types of wildlife-related activities undertaken by individuals who purchase migratory game-bird hunting permits. It could be argued that hunters, like other recreationalists, pursue activities according to the extent they wish to become specialists or generalists (see Bryan 1979). A person becomes a specialist as his attraction to one species grows because of the challenge it creates, or the types of equipment or technology it requires. It could also be assumed that commitment grows with specialization.

The hunter who is a generalist pursues several different types of hunting. We have seen some evidence of this in this section and in Section 2, which discussed the tendency of some migratory game-bird hunters to pursue other consumptive activities on a single hunting trip (Table 5). In a sense, migratory game-bird hunting may compete with other activities for the commitment of hunters. If migratory game-bird hunting does not provide the benefits desired, the hunter may turn to a different activity. For the generalist hunter, migratory game-bird hunting can serve to complement his other activities, which he may or may not be as committed to. A methodological consideration that stems from this type of behaviour is the extent to which there is overlap in data on the number of recreation days provided by various types of hunting. Data obtained from species- or activity-specific surveys do not take into account the fact that some individuals hunt more than one type of game on the same day. This type of survey may result in an upward bias in estimates of recreation days or participation rates in wildlife-related activities.

The specialist hunter may pose even greater challenges to wildlife managers. In his study of sport fishermen, Bryan (1977) observed that they tend to become specialized over time and that the most specialized sportsmen comprise a leisure subculture with unique minority recreationist values. In other words, as specialization increases, attitudes and values about the sport change. If we assume that this is also true for migratory game-bird hunters, then wildlife managers would have to consider several important implications. As specialization increases there is a greater likelihood that hunters will depend primarily on certain types of migratory game birds, that the importance of the setting in which the activity occurs will also increase, and that participants will become more concerned with conservation than with consumption. This implies that wildlife managers may have to consider greater flexibility in the strategies they employ for resource utilization by migratory game-bird hunters.

A final point to be made in this section is that less than half of the migratory game-bird hunter population forms a core group of committed hunters. Although this may, in part, be a reflection of a tendency to specialize in migratory game-bird species, committed hunters may also be part of a strong migratory game-bird hunter network such as that described in Section 5, which encourages their participation. Alternatively, it may be that these hunters experience fewer problems when they hunt; is a lack of commitment related to encountering many difficulties? Although this question extends somewhat beyond the scope of this report, it is partly answered in Section 7, which identifies the sources of problems that may influence hunter commitment.

Section 7:

Elements of satisfaction

It has been suggested that hunter satisfaction should be seen as a complex that "consists of many elements or aspects of the hunting experience" (Potter *et al.* 1973:220). Indicators of the type or amount of satisfaction migratory game-bird hunters derive from hunting offer one way of measuring the human benefits it provides. Hendee (1974) has argued that satisfactions are not identical to benefits, but rather lead to and reflect benefits. A variety of satisfactions may be obtained by hunters, and may vary according to their individual tastes. Examples of types of hunter satisfaction include the enjoyment of nature, escapism, relaxation, companionship, and physical exercise. These experiences respond to the social, psychological, and physical needs of individual hunters. Indeed, the many satisfactions that the activity provides may be the most important harvest that many hunters obtain.

Information on the sources of hunter satisfaction provides managers with only one type of data. Of equal importance is information on elements of hunter dissatisfaction. Data on dissatisfaction can be used to identify sources of actual or potential management problems. In this section, elements of hunter satisfaction are contrasted with elements of dissatisfaction in an attempt to identify some of the issues facing Canadian migratory game-bird hunters and managers.

1. Hunter satisfaction

One element of hunter satisfaction must be singled out from the rest: hunter success, or harvest. Because of its perceived impact on wildlife, "harvest" is a major preoccupation of managers. Depending on the reasons why people hunt, however, harvesting birds may or may not be as important as other elements in their satisfaction. Moreover, to assume that "satisfaction equals success" may be misleading. It is not clear, for example, that a 30% increase in the number of migratory game birds bagged in a given season will result in a similar increase in human satisfaction or benefits. Indeed, if birds are managed for the purpose of providing larger bags to hunters, it is probable that the supply of birds would not keep pace with increases in the number of hunters. Another criticism of this assumption is that it reflects only one type of benefit that accrues to those who are consistently successful when they hunt (see Hendee 1974). As many hunters seem to continue to hunt under changing probabilities of success, it could be assumed that there is more to migratory game-bird hunting than bagging birds.

Tables 25–27 illustrate the satisfaction individuals obtain from hunting migratory game birds under varying conditions. The tables are derived from the responses to a sequence of three questions, and provide an initial indication of the importance harvesting birds has in providing hunter satisfaction. The first question in this sequence asked, "In general, how much enjoyment do you get from hunting migratory game birds?". Most Canadian hunters (87.1%) enjoy migratory game-bird hunting "much" or "very much", with little regional variation. Individuals were then asked, "How much enjoyment do you get from hunting migratory game birds if you don't *bag* at least one bird?" (Table 26). A majority of hunters (67.9%) said they still derive "much" or

Table 25
Enjoyment derived from migratory game-bird hunting in general, by region (n = 1485)

Enjoyment derived in general	Respondents, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Very much	64.1	48.5	67.9	59.7	74.5	62.5
Much	18.0	36.1	20.7	27.9	18.0	24.6
Some	14.1	12.6	9.7	9.9	5.9	10.5
Very little	3.7	2.9	1.7	2.4	1.6	2.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: χ^2 = 45.42, df 12; P <0.01.

Table 26
Enjoyment derived from migratory game-bird hunting if no birds are bagged, by region (n = 1477)

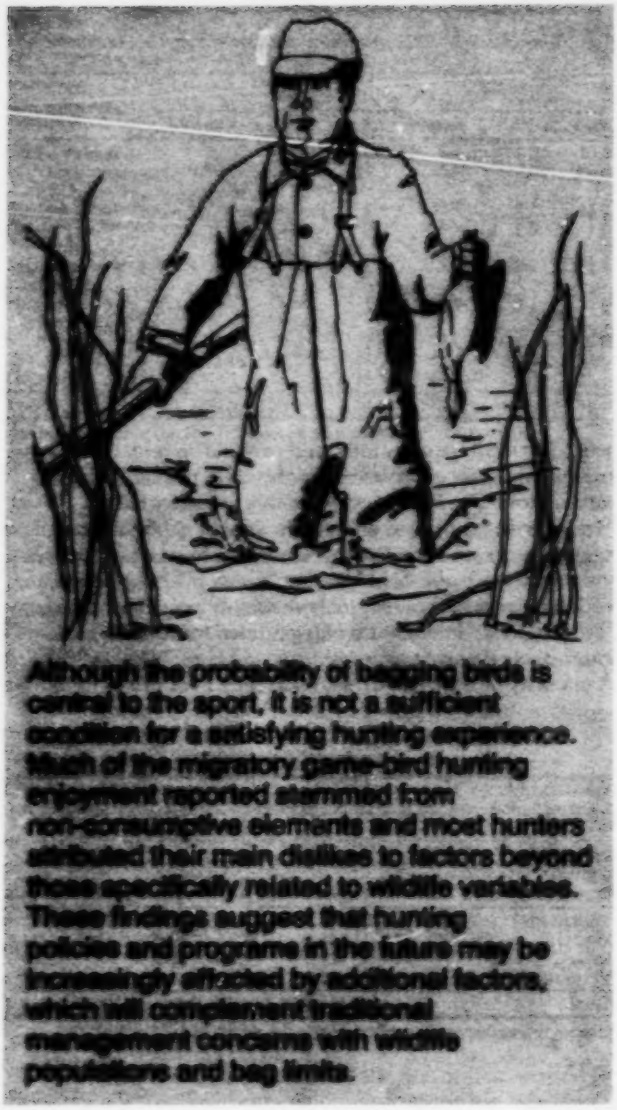
Enjoyment derived if no birds bagged	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Very much	35.0	27.5	39.8	32.6	45.2	35.6
Much	21.3	40.2	31.7	33.6	34.0	32.3
Some	27.7	23.6	21.3	26.3	18.8	23.8
Very little	16.0	8.6	7.3	7.5	1.9	8.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: χ^2 = 49.08, df 12; P <0.01.

Table 27
Enjoyment derived from migratory game-bird hunting if no birds are seen, by region (n = 1470)

Enjoyment derived if no birds seen	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Very much	20.0	12.9	16.8	13.8	21.8	16.1
Much	14.8	25.5	19.1	18.2	24.5	19.6
Some	32.0	32.6	33.4	36.2	29.7	33.6
Very little	33.2	29.0	30.7	31.9	24.0	30.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: χ^2 = 19.52, df 12; P <0.10.



Although the probability of bagging birds is central to the sport, it is not a sufficient condition for a satisfying hunting experience. Much of the migratory game-bird hunting enjoyment reported stemmed from non-consumptive elements and most hunters attributed their main dislikes to factors beyond those specifically related to wildlife variables. These findings suggest that hunting policies and programs in the future may be increasingly affected by additional factors, which will complement traditional management concerns with wildlife populations and bag limits.

Table 28
The aspects of migratory game-bird hunting most enjoyed, by region (n = 1341)

Aspect most enjoyed	Respondents, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
Having a good time with friends	8.8	3.9	11.3	9.8	13.0	9.6
Getting away from work and home	4.0	7.3	5.0	4.7	3.7	5.0
A good way to relax	8.2	7.6	12.3	13.1	12.5	11.3
Fresh air, exercise, healthy living	21.9	18.0	15.4	22.5	15.2	18.7
Nature, sunsets, animals, plants	12.9	15.7	13.9	11.8	15.9	13.6
The challenge and excitement of hunting	22.8	33.8	30.2	26.9	24.6	28.3
Shooting birds	5.1	3.1	1.9	2.1	1.7	2.6
Eating the game	14.2	7.0	4.6	9.1	11.4	8.1
Other	2.0	3.4	5.4	0.0	2.0	2.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: χ^2 = 78.98, df 32; P <0.01.

"very much" enjoyment even if no birds were bagged. Finally, hunters were asked how much enjoyment they got from hunting migratory game birds if they "didn't *see* any birds". As shown in Table 27, the enjoyment derived from hunting decreases considerably when no game birds are seen: 64.2% indicated that only "some" or "very little" enjoyment would remain. It is noteworthy that over 35% still enjoy migratory game-bird hunting "much" or "very much" even in the absence of birds. A similar response pattern tended to prevail in the regions.

Clearly, there are other variables that influence hunter satisfaction. The reasons why hunters enjoy hunting migratory game birds are shown in Table 28. Responses are based on the question,"What do you enjoy most about hunting migratory game birds?", in which nine response categories were provided. Four main reasons account for 72% of the respondents. In decreasing order of importance, they are: "the challenge and excitement of hunting" (28.3%); "fresh air, exercise, healthy living" (18.7%); "nature, sunsets, animals, and plants" (13.6%); and "relaxation" (11.3%). Each of the remaining reasons was chosen by fewer than 10% of the hunters. Although there are some significant differences, a similar trend is also seen in the regions.

Of special interest in these data is that "challenge and excitement" and "nature, sunsets, animals, and plants" are the two most important reasons given for hunting migratory game birds. Two other reasons are noteworthy in the regions: nearly 10% of hunters in BC, Ontario, and the Prairies chose "having a good time with friends" as the most enjoyable aspect of migratory game-bird hunting, but similar numbers chose "eating the game" in BC and the Atlantic regions. It is clear that success, or harvest, is not the only important reason for hunting. Indeed, the majority of hunters chose essentially non-consumptive elements of the hunting experience as an important reason for taking part in it. The category "challenge and excitement of hunting" is somewhat ambiguous in this respect; although it has a consumptive connotation, it is unclear whether challenge or excitement is derived from the prospect of killing birds, or if it is more a function of other elements, such as the anticipation of firing a shot, or of attracting birds.

2. Reasons for dissatisfaction

The reasons why hunters are dissatisfied with migratory game-bird hunting are reported in Table 29. A major source of dissatisfaction for Canadian hunters is "inconsiderate hunters" (31.7%). This is followed in descending order by "crowded hunting areas" (16.1%), "posted land" (12.0%), and "very few birds" (11.2%). The total response to these four major reasons accounts for 71% of all respondents. Each of the remaining reasons accounts for fewer than 10%. By region, the reasons for hunter dissatisfaction vary widely. In four of the five regions, "inconsiderate hunters" is ranked as the most important cause of dissatisfaction.

By arbitrarily listing the elements of dissatisfaction that were selected by over 10% of the hunters in each region, the importance of individual problems becomes evident. Although there are different problems in each region, two types predominate. The first and most important type is related to hunting sites, discussed in Section 3. This comprises a group that includes "inconsiderate hunters" , "crowding in hunting areas", "posted land", and "having no place to hunt nearby". The second type is more directly related to wildlife and is represented by the problem of "very few birds".

These two types of problems identify the major "disbenefits"of migratory game-bird hunting in Canada. Hunters are apparently much less dissatisfied with the availability of birds than they are with gaining access to hunting sites that are uncrowded and close to their residences. It is possible that the problems associated with hunting sites are also part of the broader problems facing wildlife habitat, such as its depletion in some regions of Canada. This suggestion illustrates the importance of ensuring that the environment in which hunting takes place, in particular the hunting site, is also carefully managed and protected.

3. Discussion

Another way of looking at dissatisfaction among hunters is to determine its actual source. The data in this section show that other people, rather than specific wildlife variables, are a prime source. These human factors seem to occur for the most part within the context of hunting site issues. They include encountering posted land, being too close to other hunters, and the apparent abundance of inconsiderate hunters. Two other sources of dissatisfaction, unrelated to wildlife, stem from wildlife managers themselves. These include poor law enforcement and complicated regulations, and the restrictions that managers place on season dates. These human factors account for 70.3% of all hunters' dissatisfactions, compared to 15% who indicated a lack of birds as a problem, and 8.2% who stated there was no land suitable for hunting close to their homes.

The subordinate role that harvesting migratory game-birds plays in hunter satisfaction is evident throughout this section; although the probability of bagging birds is central to hunting, it is not a sufficient condition of satisfaction in itself, nor is it a major source of dissatisfaction. Hence hunting, although without doubt a consumptive activity, is largely comprised of non-consumptive elements. It could be hypothesized that, if the benefits and satisfaction of migratory game-bird hunting originate primarily from these non-consumptive elements, then factors that detract from them will be the major source of disbenefits or dissatisfaction. We have seen that problems associated with hunting sites and other people detract from non-consumptive variables such as the place where a person enjoys hunting, the number of people around, or the hunting regulations governing the hunt. Because the availability of birds does not seem to be a significant problem, it may be necessary for managers to focus on other issues that influence the quality of migratory game-bird hunting. To ensure that migratory game-bird hunting continues to provide benefits to Canadians, it may become imperative for wildlife management to give priority to the non-consumptive or non-wildlife aspects of hunting.

Table 29
The aspects of migratory game-bird hunting most disliked, by region (n = 1307)

Aspect most disliked	Hunters, by region, %*					
	Atlantic	Que.	Ont.	Prairies	BC	Canada
No place to hunt nearby	9.5	4.6	9.6	6.2	14.2	8.2
Posted land	2.2	7.0	13.0	17.9	11.8	12.0
Poor law enforcement/ complicated regulations	8.6	7.0	4.1	5.7	9.7	6.1
Season opening late	6.6	5.2	3.4	4.8	1.9	4.4
Crowded hunting areas	14.0	22.3	18.4	15.0	10.2	16.1
Inconsiderate hunters	18.8	32.5	28.6	40.5	32.4	31.7
Very few birds around	27.6	8.5	11.1	4.5	13.3	11.2
Not bagging any birds	6.3	6.7	4.3	1.2	1.6	3.8
Other	6.5	6.3	7.5	6.1	4.4	6.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

*Overall chi-square test for differences: $\chi^2 = 163.34$, df 32; $P < 0.01$.

Section 8:

Conclusion

This report exemplifies how the study of human beings can be made relevant to wildlife management. It represents an attempt to use social research data to study man's interaction with wildlife, its habitat and managers, and to assess the benefits, issues, and apparent problems this interaction produces. The data presented here were assembled in 1976 from a survey designed to be an exploratory study of several variables thought to be of use to managers within CWS. Although there may be some shortcomings, these data nevertheless suggest many research possibilities, and have introduced several avenues for the practical application of human research data. This concluding section outlines some of the main impressions we have gained in preparing this report, and then steps beyond the data to discuss more specifically how research on human factors can serve some of the needs of wildlife managers in Canada.

1. Impressions about migratory game-bird hunting in Canada

As already stated, the data used in this report were not obtained for the purpose of resolving a particular problem or issue, but rather to learn about migratory game-bird hunters and hunting in Canada. The data indicate that hunting game birds is a highly complex activity. Although it is easy to describe it in terms of being a "recreational activity", or an "important source of recreation for Canadians", it is clear that the exact nature of the activity — its importance — is a function of several factors. It is, first of all, an activity on which half a million Canadians spend an average of 13 days every autumn, mostly on weekends. However, this type of statistic, like harvest data, does not provide a complete understanding of why people hunt, the benefits the experience provides, or the aspects of the sport they find dissatisfying.

A first step beyond these types of data is to look at who hunters are. Filion (1978), using the same survey, found that hunters are representative of the Canadian male population on the basis of income, occupation, and education. Clearly, then, hunters come from a heterogeneous background. We have found in this report that they also have different expectations, experiences, and attitudes with respect to hunting: few harvest as many birds as they expect to, many experience access problems, most hunt with close friends or relatives. According to their background or expectations, the experiences of hunters may be interpreted differently: a benefit to one hunter — "having a good time with friends" — may be a source of dissatisfaction to another — "inconsiderate hunters".

To understand what benefits accrue to hunters, or even the problems they encounter, it is necessary to understand something about hunters. For example, in this report we have suggested that issues relating to hunting sites may be an emerging source of problems for Canadian migratory game-bird hunters, although this has yet to be completely validated. We have also found that hunters have certain expectations when they hunt; they like, for example, to hunt alone or in small groups. The presence of other hunters, perhaps even on a very large pond, may infringe on some hunters' sense of privacy, and may be called "overcrowding" in hunting sites. Alternatively, "overcrowding" may mean that "there are very few birds because there are too many hunters". In the first instance, "overcrowding" may be a function of hunter psychology, their feelings about privacy or space. In the second, it may be a reflection of a more tangible problem: too many hunters for the size of an area and its game population. Understanding the actual source of the problem of overcrowding, and consequently its solution, would clearly require careful research.

This report has also shed light on what hunter benefits are. They are social and psychological in nature; they result not just from harvesting birds but also, and perhaps more importantly, from the place where one hunts, the people one hunts with, and the extent to which one's expectations equal experiences. Hunters derive benefits from a host of variables, including being in a natural setting, being challenged, and even just by seeing birds. This type of information, although complex, illustrates the diverse quality of hunter benefits and, moreover, is indicative of the importance of wildlife in providing these benefits. Clearly, without birds hunting would not exist, although harvesting them is not always necessary to experience benefits.

In Section 1 we defined wildlife management as the "science and art of studying and influencing the nature and interaction of habitats, wildlife populations, and human populations". The sections of this report have looked at several aspects of this interaction. They have not, however, looked at all aspects. This study has led us to the conclusion that human dimensions research, as one part of the variety of research needed for successful management, should be developed further but needs to be applied to specific issues, problems, or purposes. We now look at some of the ways in which such research can be used in wildlife management.

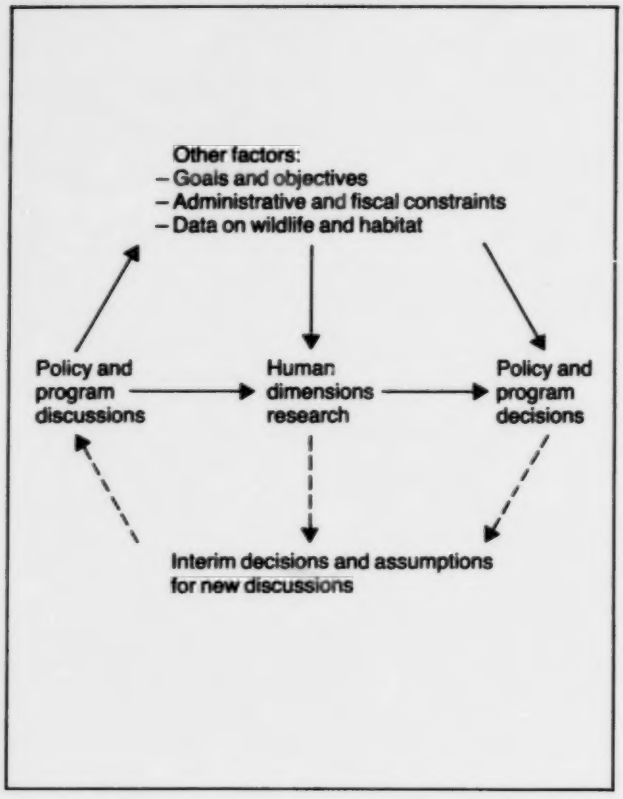
2. Applications to wildlife management

There are many potential applications of human dimensions research in wildlife management. Data sets similar to the one used in this study may assist decision makers in three important areas: maintaining, planning, and evaluating wildlife management policies and programs.

● Perhaps the most practical application of human factors research is in maintaining wildlife policies, programs, and habitat in times of fiscal restraint. In Section 4, which dealt with economic values, examples were provided on how hunter expenditures can be used to defend programs threatened by cutbacks and how data on consumer surplus can help prevent habitat from being destroyed. Similar data may also be influential when budgets are being prepared if used to strengthen the case for additional funds for existing or new programs. Although the helpfulness of economic data is often more obvious than that of non-economic information, the latter may be as influential as the former in some circumstances. Non-economic information may be especially effective in conveying to senior decision-makers the essence of the value of wildlife encounters. Examples in this study include the nature of the satisfactions provided by hunting, the social benefits generated by the hunter network, and the commitment of many participants in migratory game-bird hunting. The use of both economic and non-economic indicators can enhance the strength and credibility of the case that is made. The US Fish and Wildlife Service (1975, 1981) has made use of human dimensions research to protect two of its programs — the National Wildlife Refuge System and the Annual Migratory Bird Hunting Regulations.

● A second, and perhaps the most promising, application of human research in wildlife management relates to policy and program planning. One of the most vital roles of this type of research is to provide decison-makers with a better understanding of the human factor in the complex wildlife management equation. In this application, the research may be required to cover a very broad range of topics. It may address questions dealing with the current and future demand for wildlife, alternate sources of funding for programs, the attributes of the users of the resource and ways of managing them, and so on. Trends in user preferences and the availability of resources shed light on long-term public needs and may lead to new directions in wildlife policy formulation and program implementation (see Filion 1980*b*). Our survey results on variables associated with access to hunting sites shows the problem to be more serious in the Quebec region. The fact that hunters in this region are the least agreeable to the idea that landowners have the right to prevent access to their property for hunting, coupled with the fact that more of them than anywhere else in Canada are apparently willing to pay landowners to hunt migratory game birds, has definite implications on wildlife management planning at the regional and provincial levels. In view of the obvious importance of habitat to wildlife-related activities, future planning would probably benefit from additional human dimensions research on the topic.

Figure 3
Integrating human dimensions research in wildlife management


Other factors:
– Goals and objectives
– Administrative and fiscal constraints
– Data on wildlife and habitat
Policy and program discussions
Human dimensions research
Policy and program decisions
Interim decisions and assumptions for new discussions

If human dimensions research is to play an effective role in policy and program planning, it must be made an integral part of the wildlife management process. One way this may be accomplished is illustrated in Figure 3, which is adapted from Dillman (1977). Integrating human dimensions research into management means going beyond the "one shot" survey, which is often conducted independently from the policy-setting process. The integrated model makes human dimensions research a part of the process. For example, a special social survey is not done until policy issues and alternatives have been clearly defined. Any special survey is expected to be only one of many inputs to the decision-making process. Consequently, questions take into account the assumptions underlying inputs from other factors and thus become usable in combination with them. Several surveys may be conducted, with the results of one leading to policy and program discussion which in turn may lead to a more refined survey.

It is worth mentioning that human dimensions research can be based on several types of strategies and research designs for data collection, each of which offers advantages under certain circumstances (Clark 1977). Cross-sectional survey data, such as those used in this report, are useful in obtaining a snapshot of wildlife users at one point in time and are quite suitable for an exploratory study such as this one. Longitudinal studies, on the other hand, become useful in assessing change or monitoring particular aspects of wildlife use, such as the type of land hunters hunt on, or their feelings about the availability of specific species. Experimental analysis is the only method that allows the researchers to determine directly how behaviour can be modified or maintained and to determine the effectiveness of management actions. For example, this design can be especially useful in studying the impact of public education material, non-sampling errors in harvest surveys, or the effectiveness of interpretation approaches.

- The third application of human dimensions research deals with the evaluation of wildlife management itself. This is perhaps its most important and challenging role. There are a number of levels at which programs can be evaluated and the following example focuses on one of the most involved. The ultimate object of government is "to improve the well-being of individuals and their families" (Treasury Board 1974:5 and 1981). The effectiveness with which government programs achieve this object is obviously complex to evaluate, yet the tools of human dimensions research are capable of making a significant contribution to its assessment. For example, Operational Performance Measurement (Treasury Board 1974) is one of several evaluation methods used by Environment Canada in recent years. Human dimensions research is capable of serving the most advanced levels of Operational Performance Measurement by identifying some of the "goods" and "services" produced either directly or indirectly by programs that contribute to the well-being of Canadians, and by identifying what aspects of that well-being are met by these goods and services and to what extent. For example, maintaining wildlife populations at a certain level and managing controlled access to them may generate activities and benefits such as subsistence or sport hunting, employment in specialized retail trades, and wildlife art, which in turn enhance the well-being of Canadians by providing them with food, recreation, income, or self-fulfilment through artistic creativity and its appreciation.

The nature of satisfactions reported in the survey, the social benefits generated, the levels of commitment observed, and the methods of recruitment that are followed all suggest that effective management of migratory game-bird populations can contribute to the well-being of Canadians in many, often unique, ways. Many of the interactions between wildlife and humans can be described as leisure activities. Leisure may be the most important generator of people's values and attitudes because the style of life people lead during their free time is often of much more importance to them than time spent at work. Wildlife activities produced by wildlife programs can provide a diversity of benefits and satisfactions to people during their leisure time. In hunting, for example, important social needs are apparently met by belonging to a group of hunters and sharing an enjoyable experience with close friends or relatives. The feelings of independence, knowledge of the outdoors, self-confidence, and competence that hunters experience heightens their self-esteem and may provide a means for personal growth and self-development. As we move into the age of the computer, leisure activities will doubtless increase in importance, as will the careful management of the resources, such as wildlife, that provide a crucial role in ensuring benefits for present and future generations.

These three types of applications of human dimensions research differ from one another but are not necessarily mutually exclusive. Output from one application may serve as input to another and will be most effective in the management of wildlife when it is used in conjunction with other biological, habitat, and related research. Ultimately, the relevance of human dimensions research to wildlife management will depend on the interaction between decision-makers and social researchers, in which the information needs of managers and planners become an integral part of the actual research process.

Appendices

Appendix 1
Sample design for sociological survey on waterfowl hunting in Canada during 1975–76

Administrative region	Province	Zone	1975 Permit file (Non-permit holders in 1974) (A) Canadian residents	1975 Permit file (Non-permit holders in 1974) (B) Non-residents	1974 Permit file (B) Non-permit holders in 1973	1974 Permit file (D) Permit holders in 1973	Total
Atlantic	Newfoundland	1	59	–	42	98	199
		2	5	–	4	13	22
	Nova Scotia	1	36	–	28	92	156
		2	20	–	14	31	65
	New Brunswick	1	44	–	32	94	160
		2	18	–	13	31	62
	Regional total						644
Quebec		1	38	–	30	109	177
		2	12	–	8	23	43
	Regional total						220
Ontario		1	11	24	10	42	87
		2	19	–	16	83	118
		3	8	88	8	18	122
	Regional total						327
Prairies	Manitoba	1	23	85	23	153	284
		2	3	15	3	12	33
	Alberta	1	24	–	17	44	85
		2	40	–	28	68	136
	Regional total						538
British Columbia		1	27	–	19	53	99
		2	20	–	17	84	121
	Regional total						220
Canada total			407	212	312	1038	1969

Appendix 2
Copy of survey questionnaire (the format of the original 10-page bilingual booklet has been modified for publication here)

CONFIDENTIAL

CANADIAN WILDLIFE SERVICE

SURVEY OF CANADA MIGRATORY GAME BIRD PERMIT BUYERS

HELP US
SERVE YOU BETTER

1

PURPOSE

Permit buyers and hunters are a very important part of Migratory Game Bird management. For this reason we need to know more about you, your needs, your likes and dislikes. Your answers to this questionnaire will help us design programs to maintain and improve your hunting enjoyment.

INSTRUCTIONS

Please answer and return the questionnaire as soon as possible. Most questions can be answered quickly by placing a simple check mark ☑ in the small boxes. The questionnaire has 5 parts. Please complete each part as well as you can. All answers are strictly confidential.

[redacted]

1. Did you buy a Canada Migratory Game Bird Hunting Permit at the Post Office in 1975? (Check one)
   Yes ☐ No ☐

2. (a) Did you hunt Migratory Game Birds in Canada in 1975?
   Yes ☐ No ☐
   (b) If YES, what birds did you hunt?
   Ducks ☐1 Geese ☐2 Coots ☐3
   Snipe ☐4 Woodcock ☐5 Other ☐6
   (c) In 2(b) above please underline the one kind you spent the most time hunting.

NOTE: If you did not hunt Migratory Game Birds in 1975 would you please give us the most important reason? (check one)

Age or health ☐1	No place to hunt nearby ☐2
Friends didn't hunt ☐3	Cost too much ☐4
Family or other obligations ☐5	Too dangerous ☐6
Very few birds ☐7	Overcrowding ☐8
Other ☐9 _____ (specify)	

If you did not hunt Migratory Game Birds in 1975 please skip the rest of Part 1 and go to Part 2 on page 3.

2

3. (a) On what kind of land did you hunt Migratory Game Birds in 1975?

Your own land ☐1	Private club or preserve ☐2
Friend's or relative's land ☐3	Other private land ☐4
Public or government land ☐5	Don't know ☐6
Other ☐7 _____ (specify)	

(b) In 3(a) above underline the one kind of land where you spent most of your time hunting.

4. (a) About how many miles (one way) from your home is the place where you spent the most time hunting Migratory Game Birds?
   about ☐☐☐ miles
   (b) About how many miles (one way) from your home is the farthest place you went hunting Migratory Game Birds?
   about ☐☐☐ miles

5. (a) On about how many separate DAYS did you hunt Migratory Game Birds in each month this season?
   Sept. ☐☐☐ Oct. ☐☐☐ Nov. ☐☐☐ Dec. ☐☐☐
   (b) When did you spend the most time hunting Migratory Game Birds?
   Week days ☐ Weekends ☐

6. (a) Did you kill and retrieve any Migratory Game Birds this season?
   Yes ☐ No ☐
   (b) If YES, please indicate the number of birds you killed and retrieved for each kind:
   Ducks ☐☐☐ Geese ☐☐☐ Coots ☐☐☐
   Snipe ☐☐☐ Woodcock ☐☐☐ Other ☐☐☐
   (c) Did you kill and retrieve as many Migratory Game Birds as you expected?
   More than expected ☐1 As expected ☐2 Less than expected ☐3

7. (a) Did you hunt Migratory Game Birds as often as you expected this season?
   More than expected ☐1 As expected ☐2 Less than expected ☐3

3

(b) If LESS THAN EXPECTED, could you give us the most important reason? (Check one)

Age or health ☐1	No place to hunt nearby ☐2
Friends didn't hunt ☐3	Cost too much ☐4
Family or other obligations ☐5	Too dangerous ☐6
Very few birds ☐7	Overcrowding ☐8
Other ☐9 _____ (specify)	

8. About how much money did it cost you to hunt Migratory Game Birds in 1975? Please include costs related to: brand new equipment (guns, decoys, calls. . .), maintenance of old equipment, licenses, ammunition, gasoline, transportation, lodging, guides, dogs and partial costs of other items such as boats, clothing, camping equipment . . .

less than $25 ☐01	$25 – 49 ☐02
$50 – 74 ☐03	$75 – 99 ☐04
$100 – 124 ☐05	$125 – 149 ☐06
$150 – 174 ☐07	$175 – 199 ☐08
$200 – 224 ☐09	$225 – 249 ☐10
$250 – 274 ☐11	$275 – 299 ☐12
$300 or more ☐13 _____ (specify)	

9. Suppose that your hunting costs in 1975 would have been higher than in question 8 above. What do you feel is the highest amount of money you would have spent before deciding that you would not go hunting Migratory Game Birds in 1975?

less than $25 ☐01	$25 – 49 ☐02
$50 – 74 ☐03	$75 – 99 ☐04
$100 – 124 ☐05	$125 – 149 ☐06
$150 – 174 ☐07	$175 – 199 ☐08
$200 – 224 ☐09	$225 – 249 ☐10
$250 – 274 ☐11	$275 – 299 ☐12
$300 or more ☐13 _____ (specify)	

[redacted]

1. (a) Do you usually go hunting: (check one)
   Alone ☐ In a party ☐

4

(b) When you hunt in a party, with about how many other persons do you usually hunt?

about ☐ person(s)

(c) When you hunt in a party, who are the other members?

Immediate family ☐1 Relatives ☐2
Close friends ☐3 Acquaintances ☐4
Strangers ☐5

2. (a) What do you do with the Migratory Game Birds you kill and retrieve?

Eat them ☐1 Give them away ☐2
Keep some as trophies ☐3 Throw them away ☐4
Other ☐5 _____ (specify)

(b) What do you do with the birds most often? Underline one of the above uses in 2(a).

3. (a) Do you usually load your own shells?

Yes ☐ No ☐

(b) Do you usually keep written records of the days you hunt and the birds you kill?

Yes ☐ No ☐

(c) Indicate which of the following items you use for hunting Migratory Game Birds.

Decoys ☐ Dog ☐ Calls ☐
Blind ☐ Boat ☐

4. (a) Indicate which of your relatives and friends hunt Migratory Game Birds.

Parent(s) ☐1 Brother(s) or sister(s) ☐2
Spouse ☐3 Your children ☐4
Other relatives ☐5 Close friends ☐6

(b) Do you personally know any people that strongly disapprove of Migratory Game Bird hunting?

Parent(s) ☐1 Brother(s) or sister(s) ☐2
Spouse ☐3 Your children ☐4
Other relatives ☐5 Close friends ☐6
Acquaintances ☐7

5

[redacted]

1. (a) Which Migratory Game Birds do you like to hunt?

Ducks ☐1 Geese ☐2 Coots ☐3
Snipe ☐4 Woodcock ☐5 Other ☐6

(b) In 1(a) above please underline the one kind you like to hunt most of all.

2. (a) In general, how much enjoyment do you get from hunting Migratory Game Birds?

Very Much ☐1 Much ☐2 Some ☐3 Very Little ☐4

(b) How much enjoyment do you get from hunting if you don't bag at least one bird?

Very Much ☐1 Much ☐2 Some ☐3 Very Little ☐4

(c) How much enjoyment do you get from hunting if you don't see any Migratory Game Birds?

Very Much ☐1 Much ☐2 Some ☐3 Very Little ☐4

3. (a) What do you enjoy most about hunting Migratory Game Birds? (Do not check more than 4 reasons)

Having a good time with friends and relatives ☐01
Getting away form work or home ☐02
A good way to relax ☐03
Being alone ☐04
Fresh air, exercise, healthy living ☐05
I like nature, sunsets, animals, plants ☐06
The challenge and excitement of hunting ☐07
Shooting birds ☐08
Getting my bag limit ☐09
Eating the game ☐10
Giving birds away ☐11
Bagging a trophy ☐12
Other _____ (specify) ☐13

(b) In 3(a) above please underline the one reason that is most important to you.

4. We would like to know how important hunting is to you. If you had to give up Migratory Game Bird hunting how would you feel? (Check one)

I would miss it more than any other recreation activity I now have ☐1
I would miss it but probably not as much as other recreation activities I now have ☐2
I would probably not miss it very much ☐3

6

5. (a) What do you dislike most about hunting Migratory Game Birds? (Do not check more than 4 reasons)

No place to hunt nearby ☐01
Posted land ☐02
Complicated hunting regulations ☐03
Season opening late ☐04
Crowded hunting areas ☐05
Inconsiderate hunters ☐06
Poor law enforcement ☐07
Very few birds around ☐08
Not bagging any birds ☐09
Bag limits are too low ☐10
Lack of information ☐11
Other _____ (specify) ☐12

(b) In 5(a) above please underline the one reason which you dislike most of all.

6. (a) Do you have problems in gaining access to land for hunting Migratory Game Birds?

Often ☐1 Sometimes ☐2 Seldom ☐3 Never ☐4

(b) Do you feel landowners should have the right to prevent access to hunters on their land?

Yes ☐1 No ☐2 No opinion ☐3

(c) Would you be willing to pay a landowner for the opportunity to hunt Migratory Game Birds on his land?

Yes ☐1 No ☐2 No opinion ☐3

7. (a) Do you plan to hunt Migratory Game Birds next season? (check one)

Yes definitely ☐1 Yes probably ☐2 Probably not ☐3 Definitely not ☐4

(b) If you don't plan to hunt Migratory Game Birds next season could you give us the most important reason? (Check one)

Age or health ☐1 No place to hunt nearby ☐2
Friends don't hunt ☐3 Cost too much ☐4
Family or other obligations ☐5 Too dangerous ☐6
Very few birds ☐7 Overcrowding ☐8
Other ☐9 _____ (specify)

7

[redacted]

1. (a) Which of the following activities did you engage in during the year?

Hunting Migratory Game Birds ☐1 Hunting small game (like hares, rrouse . . .) ☐2
Hunting big game (like moose, deer, bears) ☐3 Sport fishing ☐4

(b) In 1(a) above please underline the one activity you liked most of all.

2. (a) Did you hunt Migratory Game Birds and other game on the same trip?

Often ☐1 Sometimes ☐2 Seldom ☐3 Never ☐4

(b) Did you fish and hunt Migratory Game Birds on the same trip?

Often ☐1 Sometimes ☐2 Seldom ☐3 Never ☐4

3. (a) Which of the following activities did you usually engage in during the year?

Birdwatching ☐1 Watching other wildlife ☐2
Bird feeding ☐3 Feeding other wildlife ☐4
Photographing birds ☐5 Photographing other wildlife ☐6
Visiting zoo ☐7 Hiking ☐8
Canoeing ☐9

(b) In 3(a) please underline the one activity you liked most of all.

[redacted]

1. (a) At about what age did you first go hunting Migratory Game Birds with a gun?

about age ☐

(b) Who took you hunting Birds for the first time?

Went alone ☐1 Parent ☐2 Spouse ☐3
Brother or sister ☐4 Other relative ☐5 Close friend ☐6
Don't recall ☐7 Other ☐8 _____ (specify)

8

(c) About the time you first started hunting did any of your relatives or friends hunt Migratory Game Birds?

Parent(s) ☐1 Brother(s) or Sister(s) ☐2 Spouse ☐3
Other relative(s) ☐4 Close friend(s) ☐5 Don't recall ☐6
Other ☐7 _____ (specify)

2. From the time you first went until now, about how many seasons did you skip and not go hunting Migratory Game Birds at all?

about ☐ seasons

3. (a) Between the ages of 6 and 18 years, where did you live most of the time?

On a farm ☐1 Countryside (not a farm) ☐2
Village (below 1,000 people) ☐3 Town of 1,000 – 10,000 ☐4
City of 10,001 – 100,000 ☐5 City of 100,001 – 500,000 ☐6
City of over 500,000 ☐7

(b) Right now, where do you live?

On a farm ☐1 Countryside (not a farm) ☐2
Village (below 1,000 people) ☐3 Town of 1,000 – 10,000 ☐4
City of 10,001 – 100,000 ☐5 City of 100,001 – 500,000 ☐6
City of over 500,000 ☐7

4. (a) Are you: Male ☐ or Female ☐ ?

(b) What is your marital status?

Single ☐1 Married ☐2 Other ☐3

5. (a) Do you have any children living at home?

Yes ☐ No ☐

(b) If YES how many children old enough to hunt do you have living at home?

Number of boys ☐ Number of girls ☐

(c) How many of these children hunt Migratory Game Birds?

Number of boys ☐ Number of girls ☐

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8. About how much was the total income (before taxes and other deductions) of yourself and members of your family living at home in 1975?

less than $5,000 ☐1 $5,000 – $9,999 ☐2
$10,000 – $14,999 ☐3 $15,000 – $19,999 ☐4
$20,000 – $24,999 ☐5 $25,000 or more ☐6

7. Was the last year of schooling you finished in:

Grade school ☐1 High school ☐2
College or technical school ☐3 University ☐4
No schooling ☐5

8. (a) During most of 1975 have you been: (Check one)

Employed ☐1 Retired ☐2 Housewife ☐3
Student ☐4 Unemployed ☐5

(b) If Employed, what is your occupation? Briefly describe the work you do.

_____ (occupation)

_____ (duties)

Thank you very much for your cooperation.

We welcome any additional comments you might like to make concerning problems in Migratory Game Bird hunting and conservation . . . today and in the future. Please return the questionnaire today using the special postage paid envelope.

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